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ENVIRONMENTAL IMPACT STATEMENT

FINAL DRAFT

PURSUANT TO: MONTANA ENVIRONMENTAL POLICY ACT
SECTION 69-6504 (b) (3)

MONTANA DEPARTMENT OF HIGHWAYS

ROADSIDE WEED CONTROL PROGRAM

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GENERAL STATEMENT

This statement is prepared to cover the operations of Department of Highways Herbicide Application Program, as performed by Department employees or by others for the Department on a reimbursible basis.

It must be remembered that Montana Statutes require County Weed Control Districts to control noxious weed on all lands within the State and gives the Weed Control Districts authority to enter on any land, including highway rights of way for the purpose of noxious weed eradication.

Any application of herbicides performed by the Weed Control Districts, which is not in conformance with guidelines set forth in this statement is done without the approval of the Department of Highways and, is totally the responsibility of the District.

The general objectives of the Maintenance Division of the Department of Highways for control of vegetation within the rights of way limits will be:

1) To control vegetation which competes, or interferes with the growth of desirable.native species along highway roadsides.
2) To control noxious weed infestation by spot treatment in compliance to state statutes for Noxious Weed Control.
3) To control vegetation along the highways for traffic safety, fire hazards, esthetic, and preventive pavement maintenance.

Vegetation will be controlled where possible and practicable by mechanical means. Areas that are not readily accessible to mechanical control of vegetation are behind and under guard rail, around sign posts, around bridge ends, culvert ends and slopes steeper than 3:1, where the turf will be damaged by the use of mechanical equipment. These areas will be controlled by the use of chemical spot spraying. Sterilants used behind guard rail around sign posts and bridge ends will be limited to three feet from the close edge of the above mentioned facilities.

I. DESCRIPTION

A. DEFINITIONS AND ABBREVIATIONS USED IN STATEMENT

1. Administrator of Maintenance. Responsible for the administration and operation of the Maintenance Division of the Department of Highways to maintain all interstate, primary and other designated highways in the state.

2. Application. Means the proper application of pesticides according to labeling instructions.

3. Applicator. "Applicator" means any person who applies pesticides by any method, and licensed under the Montana Pesticides Act.

4. Auxin Type Herbicides. Herbicides which give a positive response when given an Avena Section growth test. Generally a chemical which in small quantities will affect the physiological processes of a plant.

5. Chief, Field Maintenance Bureau. Responsible under the Administrator of Maintenance for administration and operation of one of the eleven maintenance divisions within the state. Each division is comprised of about five counties with from six hundred to one thousand miles of highway.

6. County Weed Board. A group of three to five county weed control supervisors appointed by the Board of County Commissioners. It is the duty of the supervisors to supervise the weed control programs within their county.

7. Dicotyledon. A group of plants characterized by producing seeds with two cotyledons.

8. Drift. Suspended liquid particles, remaining suspended or settling on areas other than the target area.

9. Equipment. Any equipment or combination thereof used to apply pesticides by any means.

10. Herbicides. Herbicides are substances or mixtures of substances in-

tended for preventing, destroying, repelling, or mitigating any weed.

11. Label. The printed or graphic matter attached to, or accompanying the container, explaining its use.

12. Monocotyledons. A group of plants characterized by producing seeds with a single cotyledon.

13. Noxious Weed. Noxious weeds as defined by Montana law include Canadian thistle, wild morning glory or bindweed, white top, leafy spurge, Russian knapweed, and such other weed or weeds as may be defined and designated as noxious weed by the Board of County Commissioners of each county.

14. Pesticide. Any compound that is registered with the Environmental Protection Agency, or State Department of Agriculture.

15. Photodecomposition. Decomposition of a substance as a result of exposure to solar radiation.

16. Phytotoxic. Toxic to plant life.

17. Pollutant. Any substance which contaminates or adds impurities to a habitat.

18. Pollution. Contamination of a habitat with substances (Pollutants) which may make it less favorable for organisms. Result of entrance into the environment of material which cannot be handled, degraded, dispersed or diffused.

19. Operator. Any individual working under the supervision of a licensed applicator.

20. Roadside Area. Roadside areas located within highway right of way, from pavement to right of way limits, or inside pavement edge to inside pavement edge on divided highways.

21. Surfactants. Substances which, when dissolved in water or an aqueous solution, reduce surface tension in order to affect the spreading, wetting and

similar properties of the solution, e.g. many detergents.

22. Temporary Soil Sterilant. An herbicide applied to the soil in a liquid, powder or granular form. Dependent upon the herbicides characteristics, it will temporarily inhibit the growth of most vegetation or only specific species growing in the treated soil.

23. Volatile. Evaporating readily at normal temperatures.

24. Weed. A weed is any plant that grows where it is not desired. Weeds are classified by growth cycle as annuals, biennials, and perennials. Weeds may be spread by wind, water, man, man's machines and by animals.

25. Weed District. Each county is required by Montana Law to form a Weed District and it must include all land within the boundaries of the county.

ae/kg --------------- acid equivalent per kilogram

ae/A ---------------- acid equivalent per acre

ai/A ---------------- active ingredient per acre

gpa ----------------- gallons per acre

LD_{50} ---------------- median lethal dose - an LD which kills 50% of a group of test animals

mg/kg --------------- milligrams per kilogram

ppm ----------------- parts per million

TLm_{50} --------------- median tolerated limit

WP ------------------ wettable powder

B. PURPOSE

The primary purposes for controlling noxious weeds and other undersirable plants along Montana's highways are: to prevent the infestation and spread of noxious weeds on highway rights of way and subsequently onto adjacent lands; provide a safe, well-maintained highway for the motorist, and comply with Montana's Noxious Weed Control Law.

C. NEED

The Montana Department of Highways Maintenance Division is responsible for maintaining more than 478 miles of secondary highways, 5,358 miles of primary and 2,274 miles of interstate highways and the associated frontage roads and interchanges. The Division is responsible for providing an economical maintenance program which will ensure the interstate motorist, Montana motorist and Montana taxpayer of a safe, efficient, long lived and all weather highway. One facet of the maintenance program is controlling vegetation that adversely affect the safety and long term maintenance of the transportation system. The safety aspects of vegetation on highway rights of way relate to the wildlife they harbor, as well as the limitations placed on visibility. Growth of tall, dense vegetation, and heavy seed producing plants along the roadway area hides wildlife in such areas. Collisions occur frequently with pheasants, rabbits, and other small wildlife; occasionally windshields are shattered or other minor damage is incurred. Startled drivers lose control of their vehicles and may leave the roadway, or result in a serious accident. Collisions with larger animals such as deer and antelope pose a greater hazard and cause substantial damage. Consequently, weedy or brushy roadway shoulders generally decrease motorist's safety and increase wildlife road kills. Roadside weeds also possess a great potential for creating conditions demanding much more intensive maintenance. Thick stands of tall weeds growing along the roadway or under and behind guard rails can act as wind barriers and cause severe snow drifting and pavement icing problems during the winter. In addition to hiding the protective device, vegetation growing under and behind guard rails are essentially inaccessible to mechanical means of control. Vegetation around culvert openings impedes drainage and, vegetation adjacent to timber structures causes a constant fire danger. Considering the many miles of highway in the state, the limited amount of manpower and equipment available, herbicides are considered the best practical method of controlling vegetation growing in inacce ible areas.

D. HERBICIDE NOMENCLATURE, PROPERTIES AND USES

1. 2,4-D amine salt

a. Nomenclature and physical properties

1) Molecular formuala: $C_{10}H_{13}CL_2NO_3$
2) Molecular Weight: 266.1
3) Melting Point: 85-87°C (Pure acid)
4) Solubility at 20°C: Distilled water - extremely soluble 300 gr/100 gr. water

b. Herbicidal Use

1) General type of plants controlled:

Widely used for control of broadleaf weeds in cereal crops, turf, pastures and non-crop land. Most dicot plants are susceptible at herbicidal rates. The amine formulation is sufficiently low volatility so that, with care, it may be used near fairly susceptible crops, if spray drift is prevent.

2) Application methods: Spray application is usually post-emergence, applied by aerial or ground equipment.

3) Rates: For crops 0.25 - 1 lb./A ae post-emergent for most weeds. In non-cropped areas, rates of 3-4 lb./A may be used.

4) Usual Carrier: Water, diesel oil, or oil-water emulsion, depending upon formulation used.

c. Use Precautions

1) Corrosiveness: Most formulations are noncorrosive to spray equipment, although some of the concentrates may be deleterious to painted surfaces.

2) Recommended methods of cleaning glassware and spray equipment: Wash thoroughly with water and detergent solution. Alcohol or ketone solvents may be used if available.

d. Physiological and Biochemical Behavior:

1) Absorption characteristics: Plant roots absorb polar (salt) forms of 2,4-D most readily. Leaves absorb non-polar (ester) forms most readily. In most cases a rain-free period of 6-12 hours is adequate for effective weed control.

2) Translocation characteristics: Following foliar absorption, 2,4-D translocates within the phloem, probably moving with food material. Following root absorption, it may move upward in the transpiration stream. Translocation is influenced by moisture and nutrient status of the plant. Accumulation of the herbicide occurs principally at the meristematic regions of the shoot and root.

3) Mechanism of Action: The mechanisms of action of 2,4-D have been studied more than those for any other herbicide. Investigators have shown that respiration, food reserves, and cell division are affected, but the primary mode of action has not been clearly established.

4) Metabolism and persistence in plants: Studies have shown complexes with protein or amino acids, oxidation of the acetate moiety, hydrolysis of the free phenol, and combination with glycosides.

5) Biological properties other than herbicidal: Induces rooting at extremely low rates, and increases blossom set on beans. It also controls the ripening of banana and citrus fruits and prevents apple drop. 2,4-D apparently has little or no biological activity on insects, nematode or plant pathogens.

e. Behavior In or On Soils:

1) Absorption and leaching characteristics in basic soil types: In black acid soil absorption 1:95 ratio. Salts of 2,4-D in sandy soil are readily leached.

2) Microbial breakdown: Low rates of 2,4-D undergo microbial breakdown in warm, moist soils. Rate of breakdown depends upon temperatures, moisture, organic matter and other soil characteristics.

3) Loss from Photodecomposition and/or volatilization: Minor loss from photodecomposition. Volatilization of amine salt formulations is low.

4) Resultant average persistence at recommended rates: Generally one to four weeks.

f. Toxicological Properties:

1) General toxicity to wildlife and fish: Pur, 2,4-D acid at 100 ppm caused slight mortality to fingerling bream and largemouth bass. This is well above the rate used in practical applications. It is not harmful to wildlife under use conditions.

2) Acute Toxicity: The acute oral LD_{50} of the various formula-

tions fall in the range of 300-1000 mg/kg for rates, guinea pigs and rabbits on a weight basis. The toxicity to cattle appears to be similar to that of laboratory animals.

3) Toxity to skin and possible danger through inhalation: Some formulations may cause irritation. Skin slight; inhalation not known but thought to be minimal.

Reference of foregoing information.[8]

3. Dicamba (Banvel)

a. Nomenclature and Physical Properties

1) Molecular formula: $C_8H_6CL_2O_3$
2) Molecular weight: 221.0
3) Melting point: 114-116°C
4) Relative resistance to decomposition by ultraviolet irradiation Stable to oxidation and hydrolysis under conventional condition
5) Vapor pressure: 3.75×10^{-3} mm Hg at 100°C
6) Solubility at 25°C: .45 g/100 ml water

b. Herbicidal Use

1) General type of plants controlled: pre-emergence applications control both annual broadleaf and grassy weeds. Foliar and soil applications control phenoxytolerant annuals and perennial broadleaf weeds and brush species. Numerous growth regulatory uses in early stage of development. Soybeans, other beans, amd most small-seeded legumes are sensitive. Spray drift to these and other ornamentals and vegetable crops should be prevented.

2) Application methods: May be applied by either ground or aerial spray or as granules, by basal application, and pre- and post-emergence, depending on specific use.

3) Pre-emergency - 0.53 lb/A. Foliar spray on broadleaf annuals- 0.06 - 0.25 lb/A. Foliar spray on broadleaf perennials and brush species - 0.5 - 10 lb/A.

4) Usual Carrier: Water, applied at from 2-40 gallons per acre.

c. Use Precautions

1) Corrosiveness: The dimethylamine salt formulation displays typical low order of corrosion.

2) Recommended method of cleaning glassware and spray equipment: Wash thoroughly with detergent and rinse several times.

Suggest acetone rinse for glassware.

d. Toxicological Properties

1) General toxicity to wildlife and fish: Low order of Toxicity.

	24-hr TLm	48-hr TLm	96-hr TLm
Small carp	659 ppm^1	465 ppm^1	- - - -
Rainbow	35,000 ppm^2	35,000 ppm^2	28,000^2
Bluegills	130,000 ppm^2	40,000 ppm^2	23,000^2

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[1] As the dimethylamine salt.

[2] As the acid.

2) Acute toxicity:

Oral LD_{50}(acid) rate 2900±800 mg/kg

Oral LD_{50}(dimethylamine salt) on the following animals has been determined.

Rat	1028 mg ae/kg
Guinea pig	566 mg ae/kg
Rabbit	566 mg ae/kg
Hen	673 mg ae/kg
Pheasant	800 mg ae/kg

3) Subacute toxicity: Dicamba (acid) at a concentration of 800 ppm in the diets of rats over a 3 month period produced no adverse effects.

4) Chronic toxicity: Two-year chronic feeding studies with concentrations of dicamba (acid) as high as 500 ppm incorporated into the diets of rats and dogs produced no observable or measurable effects on survival, body weight, food consumption, organ weight, nematology, or histological structure of the viscera of the test animals compared to control animals. It is not stored in tissues but is rapidly excreted in the urine as determined by radiotracer techniques. A three generation study shows no effect on the reproductive capacity of rats.

5) Toxicity to skin: The demethylamine salt of dicamba administered undiluted to the skin of rabbits and rats produced a very mild irritation when continued daily for 2 weeks. When diluted 1:40 in water, no irritation was observed even after 30 days. There was no evidence of systemic toxicity from precutaneous absorptio

Reference of foregoing information.[8]

4. Picloram ([illegible])

a. Nomenclature and Physical Properties

1) Molecular formula: $C_6H_3CL_3N_2O_2$
2) Molecular weight: 241.5
3) Melting point: Decomposes before melting
4) Relative resistance to ultraviolet light: Moderate
5) Vapor pressure: 6.16×10^{-7} mm Hg at 35°C
6) Solubility at 25°C: 430 ppm in water

b. Herbicidal Use

1) General types of plants controlled and common crop plants for which the compound should be useful: For general woody plant control and control of most perennial broadleaved plants. Most grasses are resistant, and broadleaved weed control in grass crops is feasible. Most broadleaved crops are sensitive except cruciferous crops.

2) Application methods: Granular formulations can be applied by hand or with commercial grandular applicators. Liquid sprays can be applied aerially, or by ground equipment. All applications should be applied in a manner to avoid drift. Liquid formulations can be applied under good growing conditions up to 3 weeks before frost.

3) Rates: Liquid formulations are used at rates of 0.5-1. 5 lb.ae/A. Rates for controlling deep rooted perennial weeds such as field bindweed and Canada thistle are usually 2-3 lb ae/A.

4) Usual carrier: The liquid potassium salt formulation is applied in water sprays in sufficient volume for uniform distribution.

c. Use Precautions

1) Recommended method of cleaning glassware and spray equipment. Rinse thoroughly with water to which ammonia has been added. Repeat three times. Use equipment only for herbicides.

2) Estimated shelf life of concentrate in storage. Three years.

d. Physiological and Biochemical Behavior

1) Absorption characteristics: Rapidly absorbed by both tops and roots.

2) Translocation characteristics: Translocates both up and down in plants. Accumulates in new growth.

e. Behavior In or On Soils

1) Absorption and leaching characteristics in basic soil types: known to be rather persistent in some soils and is leached moderately.

2) Mocrobial breakdown: Microbial breakdown is important.

3) Loss from photodecomposition: Moderately susceptible to UV

breakdown.

4) Resultant average persistence at recommended rates: Half life in soil at use dosages varied from 1 month to 11 months in initial tests.

f. Toxicological Properties

1) General toxicity to wildlife and fish: Picloram has a low order of toxicity to wildlife and fish.

2) Acute toxicity: LD_{50} values.

Rats	8200 mg/kg
Mice	2000-400 mg/kg
Rabbits	Approximately 2000 mg/kg
Guinea Pigs	Approximately 3000 mg/kg
Chicks	Approximately 6000 mg/kg
Sheep	1000 mg/kg
Cattle	750 mg/kg

3) Chronic toxicity:

Rats 90 days

1000 ppm - no effects
3000 ppm - liver effects noted

4) Toxicity to skin and possible danger through inhalation: Skin - mild irritation, not a skin sensitizer to humans. Not likely to be absorbed through skin. LD_{50} for rabbits from skin absorption 4000 mg/kg, the highest level tested. Eyes - moderate irritation which heals readily. No corneal injury likely. Inhalation - dusts may be somewhat irritating but are not likely to cause illness.

Reference of foregoing information. [8]

5. Simazine 80 WP

a. Nomenclature and Physical Properties

1) Molecular formula: $C_7H_{12}CLN_5$
2) Molecular weight: 201.7
3) Melting point: 225-227°C
4) Relative resistance to decompostion by ultraviolet irradiation: Simazine is subject to decomposition by ultraviolet irradiation, but under normal field conditions this would be small.
5) Vapor pressure at 20°C: 6.1×10^{-9} mm Hg
6) Solubility: Water of 20°C - 2.0 ppm

b. Herbicidal Use

1) General type of plants controlled and crops which may be unusuall sensitive: Simazine is a widely used selective herbicide for cont of broadleaf and grassy weeds in corn, citrus, deciduous fruits and established alfalfa. It is also used as a non-selective herbicide for vegetation control in non-crop and many vegetable crops are very sensitive to simazine.

2) Rates: 2-4 pounds ai/A are required for sleective weed control under most conditions, Higher rates are used for non-selective weed control and in several specific weed crop situations.

3) Usual carrier: Water at 200 gallons per acre or more is the usual carrier. Granules are also widely used in citrus, fruit trees, ornamentals, etc.

c. Use Precautions

1) Corrosiveness: Noncorrosive under normal use conditions.

2) Recommended method of cleaning glassware and spray equipment: Glassware and spray equipment may be cleaned by washing with water.

d. Physiological and Biochemical Behavior

1) Absorption characteristics: Absorbed mostly through plant roots with little or no foliar penetration. It has low sticking abilit and will be washed off foliage by rain.

2) Translocation characteristics: Following root absorption it is translocated acropetally in the xylem, accumulating in the aprical meristems.

3) Mechanism of action: A photosynthetic inhibitor but may have additional effects.

4) Metabolism and persitence in plants: Simazine is readily metaboliz by tolerant plans to hydroxy-simazine, which in turn is further degraded to CO_2 and other metabolites. Simazine accumulates in sensitive plants, causing chlorosis and death.

e. Behavior In or On Soils

1) Adsorption and leaching characteristics in basic soil types: Simazine is more readily absorbed on muck or clay soils than in soils of low clay and organic matter content. The downward movement or leaching of simazine is limited by its low water solubility and adsorption to certain soil constituents. Tests have shown that for several months after application the greatest portion will be found in the top 2 inches. It has little if any lateral movement in soil but can be washed along with soil particles.

2) Microbial breakdown: Microbial action probably accounts for the major breakdown of simazine in soil. A range of soil microorganisms can utilize it as sources of energy and nitrogen. The effects of simazine on these and other soil organisms appear to be small.

3) Loss from photodecomposition and/or volatilization: Photodecomposition and/or volatilization of simazine from soil is little understood. Available data would suggest that these factors are of little importance in simazine dissipation.

4) Resultant average persistence at recommended rates: The residual activity of ximazine in soil at selective rates for specific soil types is such that many rotational crops can be planted one year after application. Its relative persistence in most soils, however, has been a factor in the general preference of atrazine for corn. Simazine will persist longer under dry cold conditions or conditions not conducive to maximum chemical and biological activity. Plant removal and chemical alteration are also factors in dissipation.

f. Toxicological Properties

1) General toxicity to wildlife and fish: Toxicological investigations conducted with bobwhite, quail, mallard ducks, goldfish, rainbow trout, and bulegill sunfish have shown simazine to have very low toxicity to these species.

2) Acute oral toxicity: LD_{50} -- rats and mice: 5000 mg/kg

3) Chronic toxicity: 2 year chronic oral feeding studies, in which male and female rats were given daily dosages at various rates as high as 100 ppm of ximazine in the diet, resulted in no gross or microscopic signs of systemic toxicity due to ingestion.

4) Toxicity to skin and possible danger through inhalation: No deaths or signs of toxicological or pharmacological effects resulted from exposing groups of rats for 1 hour to a dust aerosol of Simazine 80W (80 Aerosol concertrations ranged from 1.8-4.9 mg/L of atmosphere, the heaviest concentration obtainable. No substantial skin irritation due to the chemical has been reported from either experimental or commercial use.

Reference of foregoing information.[8]

6. Prometone (Promatol)

a. Nomenclature and Physical Properties

1) Molecular formula: $C_{10}H_{19}N_5O$
2) Molecular weight: 225.3
3) Melting point: 91-92°C
4) Vapor pressure at 20°C 2.3×10^{-6}
5) Solubility in water at 20°C. 750 ppm

b. Herbicidal Use

1) General type of plants controlled: Prometone is a non-selective pre- and postemergence herbicide which controls most annual and perennial broadleaf and grassy weeds on non-crop land.

2) Application methods: Application of sprays or granules can be made either before or after weed emergence. Since much of its activity is through the roots, adequate rainfall is required to move the chemical into the root zone.

3) Rates: From 10-60 lb ai/A, depending upon the particular weed species. The higher rates are used only for control of hard-to-kill species such as Johnsongrass, Bermudagrass and wild carrot.

4) Usual carrier: Water at 50-100 gpa or diesel oil, fuel oil, or weed oil at 100-200 gpa are the usual acrriers. Agitation in the spray tank is necessary to keep the chemical in suspension.

c. Use Precautions

1) Corrosiveness: Noncorrosive under normal use conditions

2) Recommended method of cleaning glassware and spray equipment: Glassware and spray equipment may be cleaned by washing with water.

d. Physiological and Biochemical Behavior

1) Absorption characteristics: Absorbed through both foliage and roots.

2) Translocation characteristics: Translocated from roots and stems acropetally.

3) Mechanism of action: A photosynethetic inhibitor, but may have addiional effects.

e. Behavior In or On Soils

1) Adsorption and leaching characteristics in basic soil types: Prometone is more readily absorbed on muck or clay soils than on soils of low clay or organic matter content.

2) Microbial breakdown: Microbial action probably accounts for the major breakdown of prometone in the soil. A range of soil microorganisms can utilize it as a source of energy and nitrogen. The effects of prometone on these and other soil organisms appears to be small, if existent at all.

3) Loss from photodecomposition and/or volatilization: Photodecomposition and/or volatilization of prometone from the soil is little understood. Available data suggests that these factors are of little direct importance in dissipation.

4) Resultant average persistence at recommended rates: The residual activity of prometone in soil depends mainly upon soil type, moisture, and rate used. It can persist for several years.

f. Toxicological Properties

1) General toxicity to wildlife and fish: Toxicological investigation conducted with bobwhite, quail, mallard ducks, goldfish, rainbow trout, and bulegill sunfish have shown prometone to have very low toxicity to these species.

2) Acute toxicity: Oral LD_{50} - mice: 2160 mg/kg
rats: 2980 mg/kg

3) Chronic toxicity: Doses of 400 mg/kg of prometone were administered to rats by means of a stomach tube on six consecutive days of the week during a period of four weeks. All animals survived the treatment. When the rate was increased to 750 mg/kg/day, 60% of the animals survived.

Reference of foregoing information.[8]

In addition to the foregoing information on the above herbicides, the publication "Ecological Effects of Pesticides on Non-Target Species" (Sponsored by Executive Office of the President's Office of Science and Technology, June 1971) was reviewed. Due to the magnitude and technicality of the material it was not included in this statement. However, the information was given consideration in our determination of potential environmental impact. A copy of the foregoing publication can be reviewed at the State Board of Health Pesticide Library located in Helena, Montana.

E. PLANNED MEASURES TO MINIMIZE ENVIRONMENTAL IMPACT

Implementing an effective herbicide application program that will also minimize adverse environmental impact, requires thorough investigation of several important aspects of a weed control program such as long range planning, training of applicators, product evaluation and selection and operation of appropriate equipment and day-to-day management.

1. State weed control laws require the Department to control or arrange for the control of all noxious weeds growing within the limits of the highway right of way.

2. Those counties contracting some of the Departments' herbicide application work, which will be controlled and governed by the policy of the Department of Highways, will have a licensed applicator in charge. Application will be confined to noxious weeds, only.

3. The herbicide program included three distinctly separate types of applicators.

a. Noxious weed control.

b. Application of temporary soil sterilants around delineator posts, guard rail posts, sign posts, timber structures, etc.

c. Early spring application of herbicides to control fast growing vegetation located adjacent to the pavement edge, such as trees, brush, etc. that impair the sight distance, overhang the shoulder or shade the roadway to cause wet ice spots. This will only be done by spot treatment when plants are in seedling stage.

4. Each division is to have a licensed trained applicator.

The Department recognized that the County Weed Control Districts were able to train their employees more intensively and could operate more efficiently because they were able to devote full time to noxious weed control operations. Also, the critical herbicide application season for noxious weeds coincides with the period when maintenancemen are usually extremely busy doing spring patching and cleanup. Therefore, the Department recommended that County Weed Control Districts take over all roadside noxious weed control work. The Department of Highways' maintenance personnel will only apply herbicides to those areas affecting highway safety or maintenance, or in those counties where the weed district is unable to do so.

5. Before any roadside noxious weed control work is initiated, Department of Highways' Chief of Field Maintenance Bureau in each Division must meet with the appropriate Weed Control District Supervisors and discuss and agree upon the following:

a. Weeds to be controlled

b. Herbicides to be used and rates of application.

c. Types of equipment to be used.

d. Methods of equipment operation.

e, Roadsides to be treated.

f. Timing of applications.

g. Procedures for notification before applications begin.

h. Rates of charge.

i. Billing procedures.

All applicators applying herbicides to roadside under Department of Highways jurisdiction shall comply with the following guidelines:

1. Equipment. At the beginning of the application, thoroughly inspect, repair, and calibrate all equipment to be used for herbicide application. It is important to use equipment designed for the job. It is essential that the correct dosage be applied.

a. Calibrate equipment at least once when a herbicide mixture with a different viscosity is used. Always operate at the calibrated speed and pressure.

b. Replace worn nozzles, defective hose, or broken pressure gauge promptly. If leaks develop in the system, stop operation and repair immediately.

c. It is important that equipment be equipped with positive shutoff controls to prevent dribble from nozzles when herbicide is not being applied.

d. Never use excessive pressure.

2. Application. The time of application rat e and methods used in application of any herbicide shall be in conformance with the most recent manufactures label on the container for the material being used,,and the vegetation being controlled.

a. Continuous strips and the use of booms for the application of herbicides will not be permitted unless the infestation is of such a magnitude that spot spraying would cover as much area as boom spraying.

b. Auxin type herbicides such as 2,4-D, etc., must be applied to noxious weeds prior to their full bloom stage. This should allow sufficient time between the spraying and the opening of hunting season to minimize any effect on the game harvest.

c. Roadside weeds taller than two feet, or those gone to seed, shall not be sprayed unless written consent is given to do otherwise (Canada thistle and mullen weed will be the exception on the height restriction).

d. No liquid or powder type herbicide shall be applied within 50 feet of any residential area, farm yard or body of water, either flowing or non-flowing.

e. Do not apply herbicides within 50 feet of irrigation ditches or contaminate water subsequently used for irrigation.

f. The application of liquid or powder herbicides shall cease when wind velocity exceeds 8 MPH, or when drift may endanger areas beyond the limits of infestation. Temperature and wind must be given joint consideration to prevent excessive drift. The U. S. Weather Bureau, on the Beaufort scale classified an 8 MPH wind is one that is felt on the face; leaves rustle; ordinary vane moves.

g. Liquid herbicide application equipment shall not be operated at a pressure in excess of 40 pounds of pressure per square inch. The instructions on the container label shall be followed to the letter.

h. When applying liquid hormone type herbicides or water soluble or wettable powder type soil sterilants at least fifty gallons of water per acre shall be used in the mixture.

3. Equipment Operators. A minimum of one qualified and experienced herbicide equipment operator must be with each spray rig when operating on Montana Department of Highways right of way. A licensed applicator will supervise the operations.

4. Safety. The licensed applicators shall be responsible to install and maintain safety devices and protective equipment reasonably necessary to protect the life and health of employees on the job and the safety of the public. The operator is to wear protective clothing at all times, long sleave shirt and rubber gloves will be worn while handling chemicals in addition to the above mentioned. A respirator will be worn while spraying operations are being conducted.

Extreme caution is to be exercised in extracting water from streams, ponds or lakes. Water to be used and mixed with chemicals by Department forces will be obtained from hydrants at Department installations, or from city water systems, or similar sources.

5. Disposal of Herbicide Container, Excess Herbicide Mixture and Cleaning of Equipment. The careful cleaning of equipment, disposal of empty herbicide containers and surplus herbicides is an important part of safe herbicide use. Persons using herbicides must follow safe disposal procedures because their errors could lead to serious hazards to themselves and others and serious contamination of the environment.

a. Empty herbicide containers of paper, cloth, plastic, or similar material, shall be disposed of at a sanitary land fill. They shall not be abandoned. Empty herbicide barrels intended for use as garbage barrels, shall be washed out three times with water then washed twice with a strong ammonia and water solution, prior to using.

Wash water is not to be discharged into sewers or into ground water.

b. Do not dispose of excess herbicide near irrigation or drainage ditches, or other bodies of water.

Pour excess herbicides into a hole dug in level ground in an isolated area where they will not contaminate water supplies and cover with dirt to a depth of at least eighteen inches. A sanitary landfill can also be used. In any event, do not mix more than can be used.

c. Do not wash any spray equipment or herbicide containers in any lake, pond, river, stream or any other area where the effluent may contaminate water sources or adjoining property. Use the same precautions as in disposing of excess herbicides.

6. Record Keeping. Persons applying herbicides must keep a record of the area treated: Date treated, type and amount of herbicides used, equipment used, names of personnel, weather conditions, applicator and license number. Such information is a great value for evaluating the chemicals and the total effectiveness of the herbicide program. It also serves as a safeguard for the applicator and the property owner.

7 National Forest Service Land Treatment Approval. Whenever contemplating treatment any right of way under National Forest Service jurisdiction (easements) with chemicals, approval must be obtained from the Forest Supervisor of the National Forest involved. Application for such approval must be in writing on Forest Form No. 5200-16, and specify the time, method, chemicals and the exact portion of the right of way to be chemically treated.

F. PHYSIOGRAPHY

Montana, with an area of 146,316 square miles, is the fourth largest state of the Union. The half of the state southwest of the line from the southeastern corner to the Canadian Border north of Cut Bank in Glacier County is very mountainous, while the northeastern half is very much like Great Plains country - broken occasionally by wide valleys and isolated groups of hills. Elevations vary from 1,800 feet above sea level where the Kootenai River enters Idaho to

12,850 feet at Granite Peak near Yellowstone Park. Half the state lies above 4,000 feet above sea level.

The Continental Divide traverses the western half of the state in roughly a north-south direction.

G. CLIMATE.

Montana's climatic conditions vary widely throughout the state. The Continental Divide traverses the western half of the state in roughly a north-south direction and exerts a marked influence on the climate of adjacent areas. West of the Divide the climate might be termed a modified north Pacific coast type, while to the east climatic characteristics are decidely continental. On the west of the mountain barrier winters are milder, precipitation is more evenly distributed throughout the year, summers are colder in general, and winds are lighter than on the eastern side. There is more cloudiness in the west in all seasons, humidity runs a bit higher, and the growing season is shorter than in the eastern plains areas.

July (warmest month) average temperature ranges from 72.1°F for the Southeastern Division to 63.7°F for the Southwestern Division. This midsummer warmth is fairly steady, very seldom severe, and is tempered by normal nighttime minima in the 50's and 60's.

Precipitation varies widely, and depends largely upon topographic influences. Areas adjacent to mountain ranges in general are the wettest, although there are a few exceptions where the "rain-shadow" effect appears. Generally, nearly half the annual long-term average total falls in the three months May through July. There are a few valleys in the Western Division that are relatively dry, as reflected by Deer Lodge and Lonepine averages of 10.28 and 11.27 inches respectively. The lowest long-term average precipitation in the state is 9.79 in Helena 6NNW.[2]

II. ENVIRONMENTAL IMPACTS

A. AIR

Small quantities of the indicated herbicides and the water carrier will be intoduced into the air in the vicinity of the treated area by volatilization and drift.

1. VOLATILIZATION. The probability of significant amounts of herbicide volatilizing will be minimized by utilizing only low volatile salt and salt amine formulations of 2,4-D, or Tordon. Auxin type herbicides will not be applied to roadsides if ambient air temperatures exceed that specified by the label. Information presented in Sub-section I(d) and other data reviewed indicate the herbicides proposed have very low rates of volatilization and photodecomposition.

2. DRIFT. It is generally agreed that spray drift off the target area is a hazard. Experience has taught the absolute necessity of following good spraying practices. Drift will be minimized by requiring all herbicide applicators to use proper equipment and regulate and operate equipment in accordance with the guidelines presented in Sub-section I(E).

B. SOIL

1. Quantity of Herbicide Deposition in Soil. Amount of herbicide deposited directly on the soil surface will vary widely, being primarily dependent upon the rate of application, method of application and physical characteristics of the vegetation being treated. The protective nature of vegetation canopy cover will cause rates of chemical deposition to vary widely from one square foot of soil to the next. Studies conducted on rates of soil deposition beneath a canopy of brush and sparse grass indicate an average of 6 ppm of chemical deposited in the surface inch of soil when 2 pounds of 2,4-D was applied per acre.[14] Approximately equal amounts of dicamba or picloram could be expected to be deposited under similar conditions.

Quantity of temporary soil sterilant deposition such as simazine will depend primarily upon the recommended rate of application and the type of vegetative canopy.

2. Herbicide Activity in Soil. Concentrations of picloram as great as 1000 ppm in some soils have been shown to have very little affect on most soil organisms.[9] It has been concluded to be fairly certain that if picloram does effect soil organisms at lower rates (10 ppm) the effect must be very subtile and insignificant to soil fertility.[9,18] Laboratory studies have shown that the breakdown of picloram in soil is caused by microbial decomposition and is related to the nature of the soil population, temperature, and the levels of organic matter and moisture.[3,6,12,19] A study of the decomposition rate of picloram as related to annual precipitation and half order kinetic calculations indicate one pound of picloram per acre would require approximately thirty-six months to decompose to a rate one hundredth of an ounce per acre under average Montana conditions.[4] The foregoing study also found that picloram generally did not penetrate the soil more than one foot.

Generally 2,4-D is readily decomposed by microorganisms. The fact that microorganism use herbicide as an energy source is well established and it is widely recognized that this is one of the major factors affecting chemical decomposition. Evidence suggests that under normal use 2,4-D persist in the soil for about one month. In moist-loam soil 2,4-D applied at a rate of 1/2 to 3 pounds per acre persisted for 1 to 4 weeks with little or no leaching, under summertime conditions in a temperate climate.[11] 2,4-D applied at 4 pounds per acre persisted in soil for 4 to 18 weeks.[5] Dicamba is somewhat more persistent in the soil than 2,4-D. Dicamba applied to soil persisted for about 2 months.[10] Temporary soil sterilants prometone and simazine are much more persistent in the soil than are the preceding herbicides. Both soil sterilants are primarily decomposed through microbial activity; however, the magnitude of the microorganism population is directly dependent upon soil temperature and moisture. Sterilant breakdown is much more rapid in a warm moist soil than in a cool or dry soil. In moist-loam soil simazine applied at a rate of 1 to 4 pounds per acre persisted for 3 to 6 months with little or no leaching under summertime conditions in a temperate climate.[11] Simazine applied at 2 pounds per acre persisted in soil for 17 months.[17] Prometone applied at 2 pounds per acre persisted in soil for greater than 24 weeks.[7]

C. VEGETATION

The primary objective of an herbicide application is to control one species, several species or all species of plants growing in a specific area. A plant's reaction to a specific herbicide varies widely from no noticeable affect to complete death within several days. The effectiveness of a herbicide on a plant is governed by the following factors:

1. Molecular structure of the herbicide
2. Carrier and additives combined in the herbicide formulation
3. Rate of application
4. Time of day formulation is applied
5. Climatic conditions during and following application
6. The plant's physiology
7. The plant's foliar physical characteristics
8. The plant's root system
9. The plant's maturity
10. The plant's growth rate
11. The plant's exposure to spray droplets
12. Mechanical and chemical properties of soil
13. And numerous other factors

Herbicides included in the proposed program which can be considered as being selective in nature are 2,4-D dicamba picloram. Temporary soil sterilants (relatively nonselective) included in the program are simazine and prometone. All of the above indicated selective herbicides will be utilized to control broadleaf plants (dicotyledons) and will not significantly affect grasses (monocots) at the effective application rates.

Effect of roadside herbicide application is going to vary from little noticeable affect to the creation of spots around guardrails, etc. which will be completely devoid of vegetation. As previously implied the soil sterilants simazine and prometone will kill almost all species of grass and forbs. The two soil sterilants will have very little, if any, affect on deep rooted shrubs and trees.

Application of any of the previously indicated selective herbicides; at the recommended rates, as indicated on the container label, will affect only broadleaved plants and will have an insignificant affect on mature grasses. Some species of young, tender grass seedling are killed by the foregoing type of herbicide applications; however, if seedlings mature past the four-leaf stage of development, they are usually not affected. The selective nature of the indicated herbicides will change the percent composition of different plant species in a treated area. There will be an increase in grass density and production following the killing of competitive broadleaf species. The conversion from a broadleaf plant community to a grass dominated community is generally considered to be a desirable conversion for roadsides. In some areas desirable nitrogen-fixing plants will be killed along with the target plant resulting in less nitrogen being available to the plant community.

Trees and shrubs vary widely in their sensitivity to the proposed selective herbicides. However, if they are taller than two feet, applicators are instructed not to spray them, hence the major concern is toward tree and shrub sensitivity to

III. ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

A. AIR

No adverse environmental effect is expected. Pesticides have not yet been implicated to any extent in air pollution. However, with the increased concern over air pollution from any source, pesticides are also being investigated to determine what part they play, if any.[1] Some air sampling for pesticides has been done in several of the counties of California during the past several years, but no conclusive results have been obtained.[1]

B. SOILS

Literature reviewed and information presented in Section II indicate there will be no measurable long-term adverse effects on the soil. As pointed out in Section II, soil organisms feed upon all herbicides thus breaking them down into natural occurring constituents of the soil. Introduction of temporary soil sterilants into the soil will denude the soil of most protective vegetation, thus making it susceptible to raindrop splash erosion and surface erosion. However, if areas of sterilant application are limited in size, there should not be a serious erosion condition.

C. VEGETATION

One of the more serious adverse impacts associated with applying herbicide is the killing of non-target species. In many situations desirable wild flowers, etc. growing with or immediately adjacent to weeds will be seriously affected or killed through the attempt to kill the undersirable plants. Areas treated with herbicides will undergo major changes in species composition; however, this is not necessarily an adverse impact in that the need for change in species composition is the reason for using an herbicide. Control of very competitive weeds will aid in the preservation of the less competitive valuable native wildflowers through the utilization of spot treatment.

D. WATER

The general low toxicity of the proposed herbicides coupled with the very slight chance of introducing any significant quantities of an herbicide into water supplies, if proper operating guidelines are followed, leads to the conclusion that there should be no significant adverse environmental impact.

E. VISUAL APPEARANCE

Dying vegetating and spots of bare soil will have an adverse affect on roadside visual appearance; however, the degree of impact is going to be primarily dependent upon the extent of the weed infestations. Adverse visual appearance will vary from minimal along roadsides supporting small isolated patches of noxious weeds, to very severe along roadsides supporting almost continuous stands of noxious weeds. The degree of adverse impact is going to vary considerably at every site due to general visibility of the treated area to the motorist, degree of plant development and other species of vegetation in the vicinity of the treated area. Generally the adverse visual appearance should be of a short term nature due to the comouflaging effect of other growing vegetation. Adverse visual impact will in many cases be eliminated by the mowing of dead or dying foliage. Adverse visual appearance caused by drifting herbicides should be very minimal if liquid herbicides are applied according to the proposed guidelines.

F. SOUNDS AND SMELLS

Some individuals will find the smell of herbicides 2,4-D, dicamba or picloram offensive. The motorist will be exposed to the odors for very short periods of time, whereas the landowner adjacent to treated roadsides may experience a greater adverse impact due to odors.

G. HUMAN HEALTH

The health of general public should not be effected by roadside herbicide applications. Applicators and associated personnel will be the only humans exposed to significant quantities of chemicals. All chemicals they will be handling are classified as "moderately toxic" or a lesser classification, hence no adverse effects are anticipated if the proposed safety precautions are observed. There should be no individual contamination extensive enough to be harmful to human health if the proposed guidelines are followed. Applicators will be required to know how to proceed with preventive measures in case of an accidental spill or other type of contamination. Rare cases of applicators becoming sensitized or allergic to specific herbicides have been reported; however, cases are normally not considered any more serious than common allergies.

H. WILDLIFE

The low toxicity herbicides to be used, the light rates of application and the water carrier should not create any adverse condition for wildlife survival. The literature reviewed indicates the proposed herbicides will not be toxic to wildlife when applied according to the guidelines.

I. CLIMATE

The microclimate of the area treated will be altered. It is obvious that some microorganisms will be adversely affected by the changes; however, in turn other microorganisms will be stimulated by the change in vegetation type.

IV. ALTERNATIVES TO THE PROPOSED ACTION

A. MOWING

Perennial weed control requires either a plant be killed by an adverse condition created with a chemical or through separating the plant from its food supply stored in root systems. Perennial weeds not only manufacture food to extend above ground foliage, but also translocate nutrients into the root system for future food reserves. Root reserves allow a plant to initiate new growth in the spring or following damage to the above ground portions of the plant, and to also maintain and extend root systems. Control methods which completely eliminate a plant's capacity to manufacture and store reserves will eventually kill the plant.

Mowing is one method of reducing the leaf area, hence the food producing capabilities of a plant. However, mowing alone generally is not capable of reducing enough of the leaf area of a noxious weed to be considered an effective control measure. Many noxious weeds were originally classified as noxious weeds because they have a great capacity to withstand frequent defoliation, thus, are very difficult to control. Frequent mowing of weed infestations does tend to reduce seed production and reduces rate of spreading.

Mowing is an effective method of slowing the advance of perennial noxious weed infestations, but is ineffective in reducing the magnitude of an infestation. Mowing of noxious weeds will be employed in some situations; however, it will not be used as an exclusive noxious weed control method.

B. CULTIVATION

Cultivation, as a general means to control vegetation and is not practical, as it will destroy desirable growth as well as the target plant. It may be used in areas to be reseeded where plants of noxious weeds are eradicated.

Cultivation will continuously expose large areas of soil to wind and water erosion as well as create an adverse visual impact.

C. BURNING

Burning on highway rights of way has been discontinued for several years. This has been done to preserve nesting areas and prevent air pollution.

D. PULLING

Pulling of deep rooted noxious perennial weeds can be an effective means of eliminating small isolated patches of weeds if certain conditions are met. Infectations must be small, well defined and growing in friable moist soil that will enable the entire root system to be pulled without breaking. Needless to say, the foregoing conditions would rarely be encountered on most raodsides throughout the state; thus, the method would not be very effective. Also, the manpower requirements for implementing such a program would be prohibitive.

E. USE OF DIFFERENT HERBICIDES

Today's concern for causing the least possible adverse environmental impact dictates the need to utilize various types of herbicides in a weed control program. Noxious weeds vary widely in their susceptibility to herbicides; some can be readily killed by one light application of a non-persistent herbicide while others require numerous heavy applications of persistent herbicides. The proposed program is so designed as to allow the herbicide applicator to select one herbicide which will do the required job while causing the least possible adverse environment impact. In consideration of the foregoing, the list of proposed herbicides ranges from the relatively non-persistant herbicide 2,4-D to the very persistent herbicides picloram and simazine.

Numerous kinds and formulations of broadleaf weed killers and temporary soil sterilants are readily available. Comparing all advantages of all available herbicides with those proposed for roadside use would be an impossible task. The herbicides selected for the proposed weed control program do possess inherent advantages which make them very desirable for non-hazardous, efficient roadside weed control.

1. The chlorphenoxy herbicide 2,4-D was the first of the organic selective herbicides to be discovered and applied, and is still one of the most important commercial herbicides. The herbicide and many different formulations of the chemical have been intensively researched. Because of its history of intensive research, long-term use, and extensive applications, an applicator can readily predict the impact of the chemical upon a given environment. The proposed program includes the amine formulation of 2,4-D because it is not volatile and may penetrate certain species better than other formulations.[16]

Following is a brief list of significant reasons why 2,4-D was selected.

a. It has a relatively minor affect on the environment as compared to other herbicides.

b. It degrades more rapidly than other herbicides of comparable activity.

c. It is readily available and much more economical than comparable chemicals.

d. It has a low human and wildlife toxicity rating, hence is relatively safe for applicators and the wildlife.

3. Dicamba, a benzioc acid derivative, is valuable to the proposed program in that foliar and soil applications control phenoxytolerant annual and perennial broadleaf weeds and brush species. However, the chemical does not sterilize the soil and usually disappears within several weeks after application. The herbicide has a longer residual life than 2,4-D and is not extremely persistent as compared to picloram. Dicamba readily leaches to greater depth in the soil than 2,4-D, and consequently controls many species of deep-rooted perennials much better than 2,4-D. Dicamba will only be used by the Department of Highways within fenced areas of right of way where grazing is not likely to occur.

4. Picloram, a heterocyclic nitrogen derivative, is one of the most effective herbicides for one application control of field bindweed, Canada thistle, leafy spurge and Russian Knapweed. 2,4-D and related chemcials can control the listed species, if several well-timed heavy applications are made over a several-year time span. Montana, with its limited tax base and extensive highway systems, cannot afford to use anyting but the most effective herbicides. Noxious weed infestation date recorded by county weed control districts over the past several years indicated that, even though large amounts of 2,4-D and related chemicals have been used, noxious weed infestations have increased significantly in size and number. Picloram is one of the very few herbicides which shows any promise of slowing the rate of weed infestation within the state. Picloram will be used only in fenced area where grazing is unlikely.

5. Simazine, a triazine compound, is characteristically absorbed only through root systems, is very insoluble, low in leaching potential and possesses a high phytotoxicity toward most grasses and broadleaf plants. Several additional reasons why the herbicide was selected are as follows:

a. availability

b. economy

c. it does not leach laterally

d. due to its low leaching potential, deep rooted ornamental trees and shrubs are not affected by basal applications

6. Prometone, a triazine compound, was selected as one of the temporary soil sterilants to be utilized for some situations where simazine would not be affective. Promotone is more soluble than simazine and can be absorbed both by foliage and root systems; consequently, the herbicide can be used to control established deep rooted plants. Most other chemical characteristics of prometone are very similar to those of simazine.

F. DO NOTHING

Montana Weed Law made it unlawful to permit any noxious weed, as named in the legislation or designated by each Board of County Commissioners, to go to seed on any lands within any weed control district. Therefore, the Department of Highways does not have the authority to accept the "do nothing" alternate. The safety of the highway user also demands limited control of vegetation.

V. RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

There will be a temporary increase in noise and air pollution during the application operation. However, upon completion of the application there should not be any significant adverse affects other than the relatively short-term visual effects resulting from the dying vegetation. Surrounding farming and ranching operations will realize the majority of the long-term benefits of noxious weed control through greater production of higher quality produce.

VI. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The petroleum products and chemicals used in the proposed program will be irretrievable, but the quantities utilized will be minimal.

APPENDIX I. LITERATURE CITED

APPENDIX 1. LITERATURE CITED

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The following letters were received in response to the First Draft Statement of December, 1972.

The action taken in the final draft is shown for each response received.

Honorable Lee Metcalf
United States Senate
Committee on Interior and Insular Affairs
Washington, D. C. 20510

No Comment Necessary

SAM J. ERVIN, JR., N.C., CHAIRMAN

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ROBERT BLAND SMITH, JR.
CHIEF COUNSEL AND STAFF DIRECTOR

United States Senate

COMMITTEE ON
GOVERNMENT OPERATIONS
WASHINGTON, D.C. 20510

21 May 1973

Mr. Donald D. Gruel
Administrator-Maintenance
Montana State Department
  of Highways
Helena, Montana 59601

Dear Mr. Gruel:

Thanks for your letter and enclosed copy of the draft "Environmental Impact Statement" prepared for the Montana Department of Highways' Roadside Weed Control Program.

I appreciate being furnished a copy.

Kindest regards.

Very truly yours,

Lee Metcalf

Mr. John T. Harris, Associate
Professor of Wildlife Extension
University of Montana
Missoula, Montana

No Comment Necessary

MONTANA HIGHWAY COMMISSION
RECEIVED
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HELENA, MONTANA

SCHOOL OF FORESTRY

University of Montana
Missoula, Montana 59801
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DIRECTOR
CENTRALIZED SERVICES
ACCOUNTING
DATA PROCESSING
PLANNING & RESEARCH
ENGINEERING
MATERIALS
RIGHT-OF-WAY

May 31, 1973

State of Montana
Department of Highways
Helena, Montana 59601

Dear Sirs:

Given the assumption that you are going to "control" weeds along highway right-of-ways with chemicals, the impact statement is essentially a self serving document. I see no point in picking at any of the details there in. I do question the philosophy that we are going to control weeds, as they have steadily progressed across the state in spite of anything we have done in the past. I realize that there is some value to controlling vegetation along highway right-of-ways at least from a safety standpoint.

I also question the assumption that weed control anywhere has to be accomplished with chemicals. Granted it is probably the cheapest, but perhaps it has come to the time where we cannot afford the environmental costs of adding more poisons to the ecosystem. Weed control along highway right-of-ways does affect wildlife because it alters the plant complexes which are important to some species. What we may term weeds from the standpoint of crop production, may be a vital component of the needs of a particular wildlife species or it may be a necessary link in the chain of plant succession and/or erosion control.

However, if we have to depend upon highway right-of-ways making a significant contribution to wildlife habitat, we are lost anyway. I would say that where human safety is involved, vegetation must be controlled, but where this is not a factor, you should take a good hard look at what you are trying to control and the means with which you are trying to control it.

Thanks for allowing me to make comments relative to your Environmental Impact Statement .. 90-DDG. If you have further questions, please advise.

Sincerely yours,

John T. Harris

John T. Harris
Associate Professor of
Wildlife Extension

JTH:di

Mr. Loren L. Bahls, Ph.D.
Staff Ecologist
State of Montana Environmental Quality Council
Helena, Montana

No Comment Necessary

May 24, 1973

Mr. H. J. Anderson, Director
Montana Department of Highways
Helena, Montana 59601

Attention: Donald D. Gruel, P.E.
Re: EIS 90-DDG (Roadside Weed Control Program)

Dear Mr. Anderson:

This will acknowledge receipt of your draft environmental impact statement for the Department of Highways' Roadside Weed Control Program.

We shall accept this statement pending any further expression of public interest.

Thank you for your efforts toward compliance with the Montana Environmental Policy Act.

Sincerely,

Loren L. Bahls

Loren L. Bahls, Ph.D.
Staff Ecologist

LLB/cjb

DEPARTMENT OF AGRICULTURE

This response was discussed in a meeting with Mr. Gary Gingery, Pesticide Control Division, Montana Department of Agriculture. As a result of this meeting, the final draft statement was revised to more clearly delineate limits of county participation, label requirements, description of terms, areas to be treated, responsibility for conformance time of application and, other considerations of these recommendations.

[illegible] 2

STATE OF MONTANA
DEPARTMENT OF AGRICULTURE
PESTICIDE CONTROL DIVISION
MITCHELL BLDG., ROOM 339
HELENA, MONTANA 59601

GEORGE LACKMAN
COMMISSIONER
TELEPHONE
(406) 449-3730

May 18, 1973

Harry J. Anderson
Director
Department of Highways
Helena, Montana 59601

Dear Mr. Anderson:

Enclosed are the Department of Agriculture's comments in regard to your Department's Impact Statement on "Roadside Weed Control Programs". While we did not receive a copy of the statement, a copy was provided by another state agency for our review.

We have requested a copy of the statement recently from your Department's Environmental Unit and would appreciate your assistance in obtaining the statement.

Our comments are based upon two functions with the Department of Agriculture; 1.) the promotion and protection of all agriculture operations and 2.) our administrative authority under the Montana Pesticides Act.

We would certainly be willing to discuss our comments with you or your staff. Feel free to contact myself or the Commissioner.

Sincerely Yours,

Gary L. Gingery, Administrator
Pesticides Control Division
Department of Agriculture

By Direction Of:

George Lackman
Commissioner of Agriculture

GLG:sl
Enc.

COMMENTS ON THE DEPARTMENT OF HIGHWAYS IMPACT STATEMENT

"Roadside Weed Control Program"

by the

MONTANA DEPARTMENT OF AGRICULTURE

The following definitions should be amended or inserted into the text of definitions on pages 2 through 4.

"Application" means the proper application of pesticides according to labeling instructions.

"Applicator" means in terms of government or commercial, individuals licensed under the Montana Pesticides Act.

"Equipment" means any equipment or combination of equipment used in the actual application of pesticides, including such types of equipment as aircraft, ground sprayers and dusters, hand-held applicators and water surface equipment." Section 27-216 (15) R.C.M. 1947.

"Label" means the written, printed, or graphic matter on, or attached to, the pesticide or device, or the immediate container thereof, and the outside container or wrapper of the retail package, if any there be, of the pesticide or device. Section 27-217 (23) R.C.M., 1947.

"Operator" means any individual working for or under the supervision of a licensed commercial or government applicator.

"Pesticide" means any compound that is registered with the Environmental Protection Agency and/or with the Montana Department of Agriculture.

PAGE 19 -- E. PLANNED MEASURES TO MINIMIZE ENVIRONMENTAL IMPACT.

The Noxious Weed Law 16-1701 - 16-1722 R.C.M., 1947 does not allow County Weed Control Districts to control general vegetation, only weeds and weed seed designated as noxious under the law. Therefore, the impact statement must address itself to three situations:

1.) control of noxious weeds by weed control districts or highway personnel
2.) control of vegetation around various signs and posts utilizing soil sterilants.

3.) control of vegetation (not designated as noxious) along highway right-of-ways, which may create hazards to motorists, or potential damages to the highway or attract wildlife.

This statement mainly delineates that weed districts under a Highway Department contract may control noxious weeds, and highway personnel will handle the sterilant program, no specific details are given as to the control of general vegetation along highway right-of-ways.

Weed districts are limited by law to controlling noxious weeds and are not granted authority to control unclassified vegetation. Therefore, the Highway Department is most likely not in a position to grant authority to weed districts to control "weeds" or vegetation other than noxious weeds. Since the Noxious Weed law is specific in terms of only controlling noxious weeds and is funded by monies intended solely for noxious weed control, then general vegetative programs remain a responsibility of the Highway Department. This would not prevent the Highway Department from signing contracts with commercial herbicide applicators.

Noxious weeds are of extreme importance in Montana because of their adverse effects on the yields and quality of agricultural products. Counties do not possess the manpower, time or funds presently to adequately control noxious weeds through the counties, much less carry out general vegetative control programs for other agencies or groups. Agriculture in Montana cannot afford to have weed districts wasting valuable time and manpower on general vegetative control programs. The noxious weed problem seemingly becomes more severe each year, thus it behooves districts to accomplish their one and only mission of controlling noxious weeds and weed seeds.

For these two reasons, the noxious weed law and the increasing need for noxious weed control for agriculture, the Highway Department does not seem to have the authority to grant contracts to weed districts other than for noxious weed control, nor do county weed districts possess the legislation to accept vegetative control programs other than for noxious weed control programs.

Therefore, if the Highway Department desires to control non noxious vegetation on highway right-of ways, it would seem that highway personnel or contracted commercial applicators are the only ones able to accomplish such control. Which means that the impact statement must be revised to establish the requirements and guidelines for general vegetative control programs.

Even though it would seem that the impact statement needs to be completely revised, following are some additional specific and general comments.

A general comment relating to the guidelines on pages 21, 22 and 23 concerns the granting of permission for various situations involving the control of noxious weeds. The Department of Highways should designate who is authorized and qualified to grant special consignments. It was pointed out on page 19 that maintenance personnel generally lacked qualifications, would these same individuals be the ones granting permission. It is suggested that only the Extension Service herbicide specialist should provide written consent as set forth in "E Planned Measures to Minimize Environmental Impact".

An additional guideline should be set forth qualifying when spray operations should not be carried out. "Once noxious weeds have gone to seed, no spray operations will be allowed.' The reasons for this is that the original objective of controlling the noxious seed has failed and the spray operation will only succeed in using chemicals which will be ineffective and will cause the seed to be dispersed over a larger area.

Page 21 - Guideline 1.

We recommend that the following be attached to Guideline 1;

"The Department of Highways will not issue a noxious weed contract to any district that does not possess a current licensed government applicator. The name and address of the individual, his license number and type of applicator (herbicide) and any other licensing restriction shall appear on the contract. If the district loses it licensed applicator in a spray season, the contract shall be null and void until a new licensed applicator is appointed.

Page 21 - Guideline 3.

We recommend that the following be attached to Guideline 3;

"The Department of Highways maintenance personnel shall be required to be properly licensed as government applicators under the Montana Pesticides Act.

Page 21 - Guideline 4.

We recommend that Guideline 4 (a) and (b) be amended to read as follows:

a,) weeds to be controlled (shall only include designated noxious weeds)

b.) herbicides to be used and rates of application. (only herbicides registered for that use will be allowed and all labeling instructions especially application rates shall be followed.

Page 22 2(a)

This statement should be completely changed in that neither the weed districts or highway department have the authority to allow weed districts to control vegetation not designated as noxious.

Page 23 2(b)

Who is responsible for providing written consent for continuous strip spraying of right-of-ways? What parameters will be utilized to justify allowing continuous strip spraying? A road survey evaluating the noxious weeds (density, type, method control, and other factors) should be accomplished prior to approving continuous spraying programs.

Page 23 2(d)

Only noxious weeds two feet or more can be considered for spraying at least in relationship to weed control districts. Who will provide written consent? What are the individuals qualifications? ONLY WEED YET SUSCEPTIBLE

Page 23 2(g)

A specific buffer zone should be established to prevent spraying in and around domestic water supplies. This buffer zone should be based upon terrain with at least a minimum zone of 50 feet.

Page 23 2(h)

How do you plan to determine wind velocity in the field? If 8 MPH is the guideline
MAXIXUM
then an acceptable method of establishing wind velocity must be made available to

every spray unit. In addition, there may be situations in which applicators cannot spray in winds of 8 MPH or less. Should not guidelines be developed taking into account special prohibitive situations?

Page 23 2(i)

Who provides written consent for pressures over 40 pounds of pressure per square inch? Are they qualified? Permission should never be granted if labeling instructions prohibit exceeding the 40 pound limit.

Page 24 3

Who determines if operators are "qualified" and "experienced"? Does this mean each "operator" must be licensed under the Montana Pesticides Act or are they working under a licensed applicator? WORKING UNDER LICENSED APPLICATOR

Page 24. SAFETY: Specific guidelines on allowing herbicide sprayers to be filled from creeks, reservoirs or other bodies of water need to be set forth to prevent contamination. Items of concern include; prevention of back flow, protection of the intake hose to prevent contamination of the water body (55 gallon plastic garbage bags) and other possible general protective requirements. In addition filling of spray units must never be accomplished from domestic supplies or from irrigation water in areas where susceptible crops are located. This practice of filling sprayers in the field must be highly restricted. SEWER-TILE FOR FILLING

Page 24 5(a)

We recommend the following change:

a.) Empty herbicide containers shall only be disposed of in licensed sanitary landfills. They shall not be placed in open dumps or abandoned!

Page 24 6

This section needs to be expanded, a specific list of items required should be established. These items should include, but are not limited to:

- description of area sprayed
- herbicide utilized

- method of application
- rate of application
- noxious weeds controlled
- personnel involved
- date
- weather (wind, temperature, etc.)
- special problems
- recommendations for alternative methods
- other pertinent requirements

II ENVIRONMENTAL IMPACTS

The Department of Agriculture has no specific comments relative to environmental impact except for subsection D and H. The other sections and even D and H seem to explain the potential effects of herbicides on man and the environment adequately.

D. Water. N.T. D.

If Highway Department personnel or others under contract are involved in controlling aquatic vegetation, then they must also qualify for handling aquatic herbicides under the Montana Pesticides Act. Weed districts should only be allowed to control noxious weeds in and around aquatic environments.

NOTE: Licensed herbicide applicators are not allowed to spray aquatic environments unless they meet the requirements for aquatic weed control applicators under the Montana Pesticides Act.

H. Wildlife.

Highway Department spray programs should cease prior to bird or large animal hunting seasons. Many of the herbicides utilized now require a waiting period prior to harvesting crops or marketing livestock to prevent residues from being introduced to the general public. These same standards should apply to consumption of game animals in order to adequately protect man. Therefore, specific deadlines for spraying the various herbicides should be imposed prior to hunting seasons.

IV ALTERNATIVES TO THE PROPOSED ACTION

The description of alternatives presented are acceptable on a state wide basis. However, a number of alternatives were not considered such as prevention, competition, biological control and utilization of managerial systems.

While noxious weed problems occur state wide, the specifics of control must be applied to local areas and situations. If the state is to achieve long term control of noxious weeds on highway right-of-ways or in agricultural situations, then a program of integrated weed control techniques must be established.

A thorough understanding of various integrated weed control methods is required in order to determine how and when they should be utilized. These methods include;

1.) Prevention methods or procedures aimed at limiting the spread and establishment of noxious and general weeds.

2.) Biological - employment of natural enemies such as insects and plant disease to control weeds.

3.) Managerial - applying a wide range of cultural, spraying and competitive practices to reduce weed populations.

4.) Physical methods - include the use of machine and hand mowing, tillage, hand pulling, burning, smothering, and flooding.

5.) Chemical methods include the use of chemicals as foliar sprays, soil and water treatments, fumigants and stem applications for selective and nonselective control of weeds.

Through the utilization of all these techniques an environment favorable to weeds may be prevented. While the use of herbicides for controlling weeds will be available for many years and will most likely increase, man should be willing to implement a comprehensive integrated control program to achieve the various objectives related to control of weeds. It is realized the integrated control can only be applied to local situations, which demands that a thorough evaluation of noxious and general weed problems must be accomplished yearly along highway right-of-ways. This evaluation should include:

1.) a pre weed season evaluation to determine the best practical long term method of controlling weeds.

2.) a post season evaluation to determine results of the control program and recommendations for next years integrated control program.

3.) all these evaluations must relate to specific control areas to be meaningful in regard to future operations.

Finally, whether a spraying or mowing program is utilized, a cycle of weed control in any one area should not exceed 21 days. If this time span is exceeded the root reserves in the plant have built up to their original level or may have exceeded their original level, which means the monies expended for the preceding spray or mowing program were wasted. If this 21 day cycle cannot be adhered to, it is questionable if the spraying or mowing program should have been accomplished especially in relationship to noxious weeds. If noxious weed control is not the objective to be accomplished, then the 21 day cycle does not have to be followed.

F. Do Nothing Alternative

The statement as set forth is true in relationship to noxious weeds. However, in control of non noxious vegetation it becomes an alternative which must be considered. In other words, the control of general vegetation must be justified if the do nothing alternatives is to continue to be considered a negative option.

BRIDGE BURNING
SILTATION OF DRAINAGE

Qualify for Specialized Control

TIME

DEPARTMENT OF HEALTH AND ENVIRONMENTAL SCIENCES

Changes were made to incorporate these recommendations in the Environmental Impact Statement's final draft.

Department of Health and Environmental Sciences
STATE OF MONTANA HELENA, MONTANA 59601

John S. Anderson M.D.
DIRECTOR

May 16, 1973

Donald D. Gruel, P.E.
Administrator - Maintenance
Department of Highways
Helena, MT 59601

Dear Mr. Gruel:

The following are the Department of Health and Environmental Sciences comments to the Draft Environmental Impact Statement, Department of Highways, Roadside Weed Control Program.

Item (g) page 23: Guidelines for the application of herbicides adjacent to "any body of water for drinking or other domestic use" and irrigation systems should be further qualified. A numerical buffer zone established horizontal from the high water mark of a body of water with consideration given to immediate meteorological conditions, slope, and percent vegetative cover should predispose any herbicide application adjacent to any body of water to minimize potential herbicide contamination from surface run-off or drift. The term "near" as a limiting parameter for determing the use of a herbicide will not be uniformly interpreted among applicators and operators, thereby imposing a greater potential for water contamination.

The term "other domestic purposes" is extremely restrictive and excludes large amounts of surface waters classified for the growth and propagation of salmonid fishes and other aquatic fauna and flora. Waters designated as domestic use implies that these waters are for man's immediate use; for culinary and food processing purposes and possibly livestock use.

The Department of Health and Environmental Sciences recommends that this impact statement include an established buffer zone for the application of herbicides along highway rights-of-way adjacent to any surface state waters for the protection of existing water quality and indigenous aquatic fauna and flora.

Item (a) page 24: Delete "type dump" from the term "sanitary landfill type dump." The Solid Waste Section, Department of Health and Environmental Sciences, makes use of a separate working definition of a "dump" and a "sanitary landfill." A dump is an open collection of refuse and garbage not receiving daily compaction and earth cover. A sanitary landfill is a method of solid waste disposal on land without creating nuisance or hazards to public health or safety by utilizing the principles of daily compaction and burying.

If you have any questions regarding the foregoing comments, please contact me.

Sincerely yours,

Kit C. Wa

Kit C. Walther, R.S., Project Coordinator
Pesticides Demonstration Program
Environmental Services Bureau

KCW:jl

cc: Gary Gingery, Administrator, Pesticide Control Division, Department of Agriculture
I. B. Jensen, Environmental Specialist, Department of Highways

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Missoula, Montana 59801

1940

H. J. Anderson
Director of Highways
Montana Department of Highways
Helena, Montana 59601

Dear Mr. Anderson:

We appreciate the opportunity to review and comment on the draft environmental statement covering Montana Department of Highways Roadside Weed Control Program. As a whole, the statement is well done and appears to cover most significant points.

There are a number of minor points that could lead to some major problems on which we would like to comment:

1. "Roadside Area" as defined on page 3 is inexplicit. Also, the author seems to use "roadside area" and "roadside" interchangeably throughout the statement. A person reviewing the statement soon begins picturing "roadside" or "roadside area" as the area immediately adjacent to the road rather than the area within the entire right-of-way. This picture becomes more firmly implanted in reading the second paragraph of page 5 which contains such statements as: "Growth of tall, dense, and heavy seed producing plants along the roadway shoulder....", "Consequently, weedy roadway shoulders....", "Roadside weeds also....", and "Thick stands of tall weeds growing along the roadway....".

2. The statement gives no information on the magnitude of the program as it pertains to the total acreage to be treated on an annual basis, or size of individual areas. It does indicate spots will be treated, but what is the maximum size for one area? The information on mileage by classes of highways is not really meaningful in evaluating impact.

3. The statement does not discuss the specific use situation for individual herbicides such as:

a. The type of site to be treated--open rangeland or fenced right-of-way.
b. The target pest--auxin type herbicides.
c. The estimated acreage to which the herbicide will be applied.
d. The application rate to be used.

U. S. DEPARTMENT OF AGRICULTURE .. FOREST SERVICE

This response was discussed by telephone with the Environmental Co-ordinator of Forest Service, Region I and changes were incorporated into the final draft by reason of that discussion. In considering specific areas to be treated, extent of area to be treated, it is such a changeable amount from season to season no reasonable estimate can be made. Areas, which do not require it, will not be treated.

Sub-sections I(D) and IV(E) furnish general information regarding the various herbicides, but do not furnish the specific information needed to evaluate impacts. Also, choice of herbicide and application rate appear to be left to the applicator (p. 21, item 4b and p. 23, item e). One weed control district could choose to use picloram exclusively, another dicamba, etc.

4. Federal and State registration for use of the various herbicides should be discussed and reference made to label restrictions. Also, the formulation for the herbicide to be used should be specified--for example Tordon 212, Tordon 155, Tordon 101, Tordon 10K, Tordon 22K, etc.

Has the Montana registration on picloram (Tordon 22K) been extended beyond 1972? If so, is picloram to be applied under the state label? Federal registration does not allow livestock grazing of picloram treated areas. Dicamba also has restrictions for livestock grazing and haying of treated areas.

5. Page 6 -- "Considering the many miles of highway in the state, the limited amount of manpower and equipment available, herbicides are considered the only practical method of controlling weeds growing in inaccessible areas." This statement appears misleading. Are only inaccessible areas to be treated with herbicides? A review of the entire statement does not give this impression.

6. Page 23, item b -- "Continuous strips of right-of-way are not to be sprayed unless written consent is given to do otherwise." What is considered as a continuous strip -- 100 feet, 100 yards, 1/4 mile, 1/2 mile? What is considered a break in a continuous strip?

Page 23, item g -- "Do not apply herbicides near or into irrigation ditches or contaminate water subsequently used for irrigation. Do not spray near any water used for drinking or other domestic purposes." A minimum distance in which there will be no broadcast spraying should be specified. You may want to consider individual plant treatments within this zone.

50ft

Page 23, item h -- "The application of liquid or powder herbicides shall cease when wind velocity exceeds 8MPH." The 8 mph limit may be high, particularly when using dicamba and picloram. Other precautions to control drift should be included, such as use of bivert or invert spray systems and maximum temperature. The ambient air temperature of 80°F. under A-1 on page 28 is certainly at the upper extreme.

7. Page 24, item 4. Safety; page 35, item G. Human Health, and page 41, item G. Human Health -- Safety items required should be specified. The various routes of pesticide entry into the body should be protected. The three main routes being dermal, respiratory, and oral. Homer R. Wolfe* states: "Absorption through the skin is the most important route of entry of pesticide into the body during most exposure situations, especially where liquid sprays and emulsifiable concentrate formulations are involved." He discusses a number of safety and personal protection measures in his article.

The discussion of Safety and Human Health is extremely brief and cursory. Proposed safety precautions are not spelled out.

8. Page 25, item 7 -- National Forest Land Treatment Approval. All projects for treating any right-of-way under National Forest Service jurisdiction should be submitted to the Forest Supervisor of the National Forest involved on form 5200-16 (copy attached) for review and approval by the Pesticide Committee.

9. Page 24 or 25 -- It would seem there should be an item included on water monitoring. Water monitoring should be done on any stream where the potential for contamination and deterioration of quality exists. The Clark Fork River would be an example.

10. Page 28, item B. Soils -- Impact of soil sterilants as it effects erosion is not discussed. Erosion is briefly mentioned on page 39, item B. Impact on erosion could be significant if soil sterilants are used on long expanses of guard rail.

11. Page 30, item C. Vegetation and page 39, item C. Vegetation -- Impact and precautions to be observed for livestock grazing and haying of treated areas should be discussed, especially areas treated with picloram and dicamba. (See comment 4).

12. Page 32, 1st sentence -- "Application of any of the previously indicated selective herbicides, at the recommended rates, will affect only broadleaved plants and will have an insignificant affect on mature grasses." What are the rates being recommended? The information in sub-section I(D) lists a range of rates. Dicamba applied in excess of 4 lbs. a.e. per acre can cause temporary injury to established grass.

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* Homer R. Wolf, Chief, Wenatchee Research Station, Environmental Protection Agency, Wenatchee, Washington. Weeds, Trees, and Turf. April 1973.

13. Page 34, last paragraph -- This paragraph appears to be misleading. The report indicates soil sterilants would not be confined to noxious weeds, but would be used around delineator posts, guardrail posts, sign posts, etc. (Page 19, E-3b).

14. Page 39, item B. Soils -- "....there will be no measurable long-term adverse effects on the soil." Repeated applications of soil sterilants will have long-term effects on the soils.

15. Page 40, 1st sentence -- "Control of very competitive weeds will aid in the preservation of the less competitive native wildflowers." This is a speculative and tenuous statement. Most native forbs (wildflowers) are more susceptible to herbicides than many of the noxious weeds.

16. Page 40, item D. Water -- "The general low toxicity of the proposed herbicides coupled with the very slight chance of introducing any significant quantities of a herbicide into water supplies, if proper operating guidelines are followed, leads to the conclusion that there should be no significant adverse environmental impact." What about the intentional treatment of cat tails and other vegetation as discussed under item D, page 32? See also our comment No. 9.

Page 41, item H. Wildlife -- The possible teratogenic effect of 2,4-D and the contaminant dioxin in 2,4,5-T on animals should be discussed. Information is available in:

a. Report of the Secretary's Commission on Pesticides and their Relationship to Environmental Health. Parts I and II. U. S. Department of Health, Education, and Welfare. Dec. 1969.

b. Report on Background Information for the Phenoxy Herbicides, 2,4-D - 2,4,5-T - 2,4,5-TP. July 1972.

c. Report on 2,4,5-T. A Report of the Panel on Herbicides of the President's Science Advisory Committee. March 1971.

Additional information you may wish to review that covers the chemicals proposed:

a. An Outline of Background Information for the Herbicide Simazine. February 23, 1972.

b. Environmental Statements Background Documents Pesticides. Dicamba. July 1972.

c. Picloram - Background Information Statement. March 6, 1972.

I hope that the above comments are helpful and will be considered as constructive, as that is our intent.

Sincerely,

STEVE YURICH
Regional Forester

Enclosure

USDA-FOREST SERVICE

WORKING GROUP ON PESTICIDES
PEST CONTROL PROGRAM REPORT
(Ref: FSM 5200)

DEPARTMENT/AGENCY

DATE SUBMITTED

FOREST

REGION

PERSON TO CONTACT/TELEPHONE NO.

Be sure that entries are correctly aligned horizantally.

OBJECTIVE	PESTICIDE	APPLICATION					SENSITIVE AREAS[1]	REMARKS
(a) PROJECT NO. (b) TARGET PEST (c) PURPOSE	(a) COMMON NAME (b) % AI OR LB/GAL (c) REGISTERED USE AND REGISTRATION NO. *(if available)*	(a) FORM APPLIED *(Dust, granule, emulsion, bait, solution, gas, etc.)* (b) USE STRENGTH (%) OR MIX	LBS AI PER ACRE OR OTHER RATE	METHOD *(Aircraft, ground, aerosol, ULV, LV, other)*	(a) ACRES OR OTHER UNIT TO BE TREATED (b) NUMBER AND DESCRIPTION OF SITES	(a) SEASON OF YEAR (b) STATE OR REGION	(a) AREAS TO BE AVOIDED (b) AREAS TO BE TREATED WITH CAUTION *[1] Croplands, lakes, streams, human, exposure, other*	(a) PRECAUTIONS TO BE TAKEN (b) NO. OF APPLICATIONS (c) USE OF TRAINED/CERTIFIED PERSONNEL (d) MONITORING (e) OTHER
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

Following are the topics to be included when a narrative justification is required for specific pesticide usages:

1. (a) AGENCY (b) PROJECT NO. (c) TARGET PEST
2. IMPORTANCE - (Such as economic losses or threat to health that could occur if control operations were not accomplished.)
3. AREA TO BE TREATED - (Give detailed description, including acreage, of type of site to be treated.)
4. METHOD - (Give additional details, beyond those on Form #1, on the specific pesticide, including registration number if available, and control method proposed.)
5. SPECIAL PRECAUTIONS - (Include details of effort to avoid human or environmental hazard and special training or experience of personnel.)
6. ALTERNATIVE MATERIALS OR METHODS - (List any that have been considered and give reason for rejection.)
7. COOPERATORS - (List any other organizations involved and the way in which they are involved, as governmental, private agencies, or individuals.)
8. MONITORING - (Describe type and extent of any monitoring activity planned.)

WESTERN MONTANA SCIENTISTS' COMMITTEE FOR PUBLIC INFORMATION

By marking the final draft more explicit on the limitation of chemicals to be used, areas to be treated, supervision of application and assurance of disciplinary action, we believe the most controversial issues referred to in this comment have been alleviated. Statements concerning wildlife kill and drifting snow are made from knowledge obtained from years of observation on highways with cleared right of ways versus brushy, timbered areas.

Western Montana
Scientists' Committee for Public Information

205B Natural Science Bldg.
University of Montana
Missoula, Montana
59801

June 1, 1973

Mr. Donald D. Gruel, P.E.
Administrator-Maintenance
State of Montana Department of Highways
Helena, Montana 59601

Re: Environmental Impact Statement..90-DDG/Montana Department of Highways
Roadside Weed Control Program

Dear Mr. Gruel:

The comments made herein are submitted in response to your Draft Environmental Impact Statement on the Montana Department of Highways Roadside Weed Control Program as provided for by the Montana Environmental Policy Act. These comments are submitted on this 1st day of June as agreed in our telephone conversation of the 23rd of May, 1973.

Comments are segregated according to section headings in the Draft Environmental Impact Statement (DEIS). These section break downs will be indicated as titled paragraphs with subsections being indicated in the left hand margin of the text.

It is our general conclusion, based on review of the DEIS, that it serves principally as a rationale for continuing the present program. It is incomplete in several instances and is in the long term view ecologically unsound.

DESCRIPTION

C Substantial discussion was given to the safety factors involved with untreated highway right of ways in this section. It was stated early in the text that, "weedy roadway shoulders generally decrease motorist safety and increase wildlife road kills". It is our belief that such an unequivocal stand prejudices the entire approach toward the absolute need for control, with out providing qualitative evidence supportive of the basic presumption. Considering the statement further, the desirable characteristics for wildlife cover are completely ignored. Road kill accident studies were not cited, discriminating between rates on right of way sections subjected to "weed" control as compared with non-controlled segments. If big game need to cross a road, it would seem that they would do so whether or not roadside vegetation was controlled or not.

NOT TRUE - BOTH MOTORIST AND GAME HAVE TIME TO [illegible]

"Thick stands of tall weeds growing along the roadway or under and behind gardrails," it is stated, "can act as wind barriers and cause severe snow drifting and pavement icing problems during the winter." This statement is made without quantitive substantiation, as to the degree of severity of the problem. Careful evaluation may demonstrate some safety attributes accruing from the maintance of a vegetated right of way.

The last sentence of this subsection states that the use of herbicides represent the only practic method of controlling weeds growing in inaccessible areas, "with the limited amount of manpower and equipment available in the state." Again qualitive assessment is lacking with regard to the relative economic costs of an herbicide spraying program as compared with one based on the use of manually operated mowing equipment, given equipment costs, etc.

D The section entitled, "Herbicide Nomenclature, Properties and Uses" was particularly unsatisfactory. The principle reference used for that section was to a work published in 1966. Further data on physiological and toxicological properties of the herbicides being considered for use is certainly available. The most notable lack in the description of the various compounds was for 2,4,5-T which has caused international concern because of its alleged teratogenic properties. Its common impurity (and possible metabolite) 2,3,7,8 tetrachloro dibenzo-p-dioxin was not mentioned at all. DO NOT USE 245T

NO SPRAYING WITHIN 50 FT OF WATER - EFFECTIVE TREATMENT [illegible]

Sensitivity of other species of fish beside bream and bass were not discussed in the description of 2,4-D. This deficiency is particularly critical in lieu of some research findings which tend to indicate that 2,4-D may constitute a potential danger in normal use to fish.

[U]se in lakes and ponds for killing aquatic weeds is not recommended, at least where trout are present, as the concentration required for effective weed control leaves little or no margin of safety for the fish. (Holden, A.V., J. Inst. Sew. Purif., pp. 361-368, 1964)

NOT DONE

The DEIS is further deficient and misleading in its failure to tabulate data from newer, pertinent publications such as reference 15. The purpose of the DEIS is to provide information on environmental affects of actions before the decision is made to effect that action. Intelligent comment is impossible without data from reference 15 and other recent and highly significant research precipitated by the increased utilization of such chemicals. For example a large body of literature has developed as a result of EPA's consideration of banning the use of 2,4,5-T (See attached article from the Wall Street Journal).

245T NOT USED

E As presented in the DEIS the Department of Highways District Chief of Field Maintenance is to meet with the appropriate weed control district supervisors for the purposes of discussing such matters as the weeds to be controlled, herbicides to be used, equipment, methods, timing of application, etc. With such an important and central policy making role in how, when and where herbicides will be used the qualifications of these Field Maintence Division Chiefs is of critical importance, and yet their qualifying training and or experience are not even alluded to.

Critical to performance according to the quidelines, is a program of inspections. In programs such as the one under discussion, where the utilization of toxic substances are involved, this inspection program is particularly critical. Despite this importance an inspection program is not discussed, for example in the use and maintence of the equipment. In the DEIS you state that it is essential that the correct dosage be applied, that the equipment must be calibrated as different herbicide mixtures with different viscosities are used, that worn nozzles, defective hoses or broken pressure guages be promptly repaired and positive shutoff controls be employed to prevent dribbling from the nozzles. The use of excessive pressure is also highlighted as an important consideration since increasing the pressure will decrease the size of droplet increasing the possibility of excessive drift and yet no mechanism for the inspection of equipment equipment or crew techniques is provided for. It further is our contention that the Department of Health and Environmental Sciences should be involved in such a surveillance program in addition to such other inspectors as the County or Highway Department may provide.

The guidelines presented state that the application of liquid or powder herbicides shall cease when wind velocity exceeds 8 MPH. In as much as large areas of the state have meager meteorological monitoring coverage how will this determination be accomplished? What precautions are to be used when wind is irregular or gusty, instead of steady.

The discussion of disposal without provisions being made for inspection and surveillance is a very serious short coming. The consequences of carelessness or accident are to great.

Half a gallon of 2,4-D concentrate containing 4 lb of active constituent per gal. if dispersed in one minute in a small stream flowing at the rate of 10 ft^3/s *(5 m.g.d.), such as a small trout stream, would produce an average concentration of 53 ppm of 2,4-D. The 24 hr.* LD_{50} *value for 2,4-D in some formulations is about 0.5 ppm, so that fish are exposed for a brief time to about one hundred times the* LD_{50} *concentration, a condition which could be lethal. In fact, spillages of weed killers, insecticides, sheep-dips and disinfectants almost invariably cause fish mortalities if the liquid concentrates enter streams directly or via drains. (Holden, A.V., J. Inst. Sew. Purif., pp. 361-368, 1964)*

Discussion of Equipment Operators requires that a minimum of one qualified and experienced herbicide equipment operator must be with each spray rig, and yet the criteria used in determing qualifications and experience is not elucidated.

The concluding provision requires that spray equipment or herbicide containers are not to be washed in any lake, pond, river, stream or other areas where its presence may be harmful. How will a location where the presence of an herbicide will not be harmful be determined and what physical conditions will lead to such biological isolation.

GRAVEL PIT IN HIGHWAY YARDS

ENVIRONMENTAL IMPACTS

As stated in the DEIS only low volatile salt and salt amine formulations of 2,4-D, 2,4,5-T and Tordon will be used as a means of reducing the amounts of the herbicide volatilizing. As used in the context found on page 28, a low rate of photodecomposition is apparently an attribute. Low volatility may be an attribute in certain cases, however resistance to photodecomposition with a volatile hazardous compound is definitely not.

C It is stated unequivically that "there will be an increase in grass density and production following the killing of competitive broadleaf species."

[illegible] spot treatment

In some areas it will prove difficult or impossible to establish grasses. Such areas should not be sprayed in order that vegetation of some type continue to provide protection against erosion.

Provisions must be made to determine such areas, and to selectively prohibit the use of herbicides on such sites.

D As was discussed in the section regarding herbicide disposal and guidelines for operators, the potential for contamination is serious. As is stated here "pesticides as water pollutants will occur in water as intentional and unintentional additives....Unintentional pollution of water should be very minimal if all applicators follow the guidelines set forth." With no monitoring and surveillance program however, there will be little assurance that such guidelines will be followed. The comment regarding the rated low toxicity to fish has already been criticized in an earlier section(Holden).

To discuss the utilization of the Road Side Weed Control Program in conjunction with the Mosquito Control Program appears to be without merit and should clearly come under other guidelines, with specific consideration being given to it in its own right.

E It appears from the DEIS that "the application herbicides and soil sterilants will be limited to spot treatments of noxious weed infestations." It is our impression that this procedure has not been applied in the past and we are concerned whether this is really the intent under the terms of this DEIS. This is the intent

ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

C Areas which are disturbed contrary to the comments made in the last sentence of this section, are subject to invasion by precocious, hardy plants. When cover is sufficient, and other necessary conditions obtained, succession will occur and "weeds" will be eliminated. To summarily discount the loss of "desirable" plants, because a species change was sought anyway, utilizing the means justifies the end arguement, appears without merit.

ALTERNATIVES TO THE PROPOSED ACTION

Under the discussion of alternatives there appears to be no suggestion of ranking measures in terms of least to most impact on the environment. The use of chemical controls should specifically be designated as the "last resort" control rather than the first line of defense.

RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

The content of this section is simplistic. Three examples which might indicate long term problems in "productivity" follow:

1) It is now known (Science 172,277, 1971) that some grasshoppers have added 2,5 dichlorophenol (purportedly from injestion of sprayed 2,4-D) to their defensive mechanisms in the repulsion of predators. It is of course too early to say whether this mechanism will lead to more grasshoppers but adding more chemicals to the biosphere may well do more ultimate harm than is suggested in the impact statement.

2) Aldo Leopold notes that with the increasing trend toward monocultures in our country, roadways and railroad cuts are among the few refuges for diverse species. Continued efforts to kill off such species, were they to succeed, might cause irrepairrable damage to local ecosystem diversity, and later to productivity.

3) It certainly is not surprising that "weed infestations have increased significantly" (pg. 49 of the statement). This has been the pattern of all pesticide use in the "civilized" world. (see N.W. Moore, A Synopsis of the Pesticide Problem", Adv. in Ecological Research, Vol. 4, pp 75-125, 1967) Basically the ecological situation is changed because natural selection of strains resistant to the pesticides allows a drastic increase in the population of the pest.

BIBLIOGRAPHY

The bibliography relies too heavily on certain kinds of sources, principally journals devoted to weed control rather than to environmental protection. This is not reassuring nor is the fact that much of the data is too old to be relied upon.

CONCLUSIONS

It is our chief concern that the planned precautions as stated in the DEIS are actually carried out as provided for. There is no clear guarantee that this will be done in the present statement.

If weeds must be cleared in some areas, they should be mowed before they are ready to seed. "Long" term productivity will not suffer from an ecologically sound management system.

Weed control of any nature should not be allowed to start until after wildlife have finished nesting in the spring and early summer.

If the state weed control laws do not provide for the "do nothing" or 'no action' alternative where this would be appropriate, drafting should begin to make such modifications in the mandate to the Department.

Your consideration of the comments made will be appreciated.

Sincerely,

William Tomlinson

William Tomlinson
Research Associate

cc: Environmental Quality Council

EPA Seen Resuming Its Study of Safety Of 2,4,5-T Herbicide

23 Ap 1973

Appeals Court Lifts Injunction That Prevented Agency From Acting to Ban Weed Killer

A WALL STREET JOURNAL *News Roundup*

The Environmental Protection Agency is likely to proceed soon with its interrupted consideration of whether the present use of the herbicide 2,4,5-T poses a health hazard.

A federal appeals court in St. Louis removed an injunction Friday that prevented certain EPA moves to ban the weed killer, blamed for birth defects in Vietnam, United Press International reported. An EPA spokesman in Washington said that while the injunction specifically dealt with EPA moves to end the chemical's use on rice, it also had barred the agency from taking any further restrictive actions against 2,4,5-T since late 1971.

Assuming there aren't any more legal roadblocks thrown up, the EPA spokesman said that the agency wants to hold public hearings to consider all evidence for and against 2,4,5-T and whether the uses still in effect should be continued. The spokesman said that the renewed scrutiny will be far broader than its use on rice and will include use on pasture land and along rights of way. These uses, which account for the bulk of the chemical's consumption in the U.S., hadn't previously been cited in government actions.

Because of suspected health hazards, the chemical already is off the market for aquatic use, in liquid formulations and for uses around homes and in recreation area.

Further actions were stymied after a government proposal to cancel use of rice and other food crops was challenged by the four companies registered to sell 2,4,5-T—Dow Chemical Co., Hercules Inc., Amchem Inc. and Thompson Harvard Chemical Co. Amchem and Thompson asked the EPA to hold a public hearing, but it never occurred because of the court injunction, which was obtained by Dow Chemical. Under federal law, a contested cancellation order can't be made final until after a public hearing.

The debate over the chemical's use on food crops goes back to May 1970, when government researchers reported that tests with laboratory animals suggested 2,4,5-T might produce birth defects. A year later, a scientific advisory panel reported to the EPA that knowledge of 2,4,5-T is limited but that "any accumulation (of the chemical) that might constitute a hazard to any aspect of human health is highly unlikely." The panel said, though, that TCDD, a highly toxic chemical impurity sometimes produced in manufacturing 2,4,5-T could be a health problem.

DEPARTMENT OF FISH AND GAME

The recommendations in these comments were discussed, point by point, with Mr. James Posewitz and Mr. Al Whipperman of the Department of Fish and Game.

The Environmental Impact Statement's final draft was revised as necessary to conform to the agreement reached in this discussion.

STATE OF MONTANA

DEPARTMENT OF
FISH AND GAME

Helena, Montana 59601
June 12, 1973

Mr. Donald D. Gruel
Administrator-Maintenance
Department of Highways
Helena, Montana 59601

Dear Mr. Gruel:

As requested in your letter of April 23, we have routed the draft environmental impact statement concerning roadside weed control to our regional offices for review.

Attached for your information are memos from various individuals who reviewed the statement. I hope the information submitted will be of use to you, and we thank you for the opportunity to comment.

Sincerely,

JAMES A. POSEWITZ, ADMINISTRATOR
ENVIRONMENT AND INFORMATION DIVISION

JAP/sd

cc: Fletcher Newby

STATE OF MONTANA
DEPARTMENT OF FISH AND GAME
HELENA, MONTANA

JUN 11 1973

2-15

Office Memorandum

TO : Wes Woodgerd Attn. Ralph Boland **DATE**: June 11, 1973

FROM : Roger Fliger by Clint Bishop

SUBJECT: Environmental Impact Statement for Montana Department of Highways Roadside Weed Control Program.

In the statement, I see mention of the method so frequently used, which is broadcasting with spray boom along highways whether weeds are present or not. I have seen highway equipment operating in this manner in Region 5 in recent months. This occurs even in areas that are kept mowed short.

It is my understanding of the instructions on weedicide cans that no more chemical is to be used that is absolutely necessary. I take this to mean that weedicide in the prescribed concentrations is to be applied only to weed patches. I feel that broadcast spraying along roadsides, even in grass only and in mowed areas is in no way complying with these directions.

I feel strongly that weedicide applicators should be trained in weed recognition and in preparation of the weedicides in use and that applications should be on weed patches only rather than broadcast along the roadsides as is occurring at present.

Also, I feel that it is useless to spray weed patches that extend from the highway right-of-way onto private land unless both the private landowner and the Highway Department are both required to spray. Partial spraying of weed patches is costly and useless. I have frequently seen areas where the weeds on the highway right-of-way have been sprayed but part of the same patch on private land is left untouched.

IF THE LANDOWNER DOES NOT SPRAY, WEED DISTRICT IS REQUIRED TO.

STATE OF MONTANA
DEPARTMENT OF FISH AND GAME
HELENA, MONTANA

RECEIVED
MAY 31 1973
Fish & Game Dept.

Office Memorandum

TO : Ralph Boland

DATE: May 29, 1973

FROM : LeRoy Ellig

SUBJECT: Montana Highways Weed Control Program

The Environmental impact statement fails to consider or discuss Plant Ecology or plant succession and its role in the plant community. The failure to consider the role of plant succession can only prolong and intensify the department's vegetative problem.

Specific comments follow:

1. Page 5.C. Need. This section is generally confusing. There is no argument that tall weeds can cause drifting snow along road shoulders, but road shoulders are routinely mowed and this effectively reduces the snow problem without any need for spraying. UNDER GUARD RAIL AND AROUND SIGN POSTS BRIDE ENDS -

2. Page 22. 2.a.
Page 23. 2.b. - The program is for noxious weed control. If continuous strips are to be sprayed with written consent the conditions under which this is allowed should be specifically outlined. ONLY WHERE INFESTATION IS SUFFICIENT TO WARRANT

3. Page 32. "The selective nature of the indicated herbicides....." Grasses are only a small part of the plant community and the herbicides will kill all species but grass. Broadleaved plants are a desirable, important and necessary part of any plant community. "Competitive broadleaf species" is used in a context which indicates a complete lack of consideration for the knowledge available in plant ecology and plant succession. ONLY NOXIOUS WEEDS

4. Page 40. "Control of very competitive weeds" -- Weeds are broadleaved plants and so are the valuable native wildflowers. The only way valuable native wildflowers can be benefited is by spot control of noxious weeds without continuous strip spraying. THIS IS OUR POLICY

5. Page 52. "Surrounding farming and ranching operations....." -- This statement again totally ignores plant ecology principle. Cultivated farm lands will always have weed problems regardless of what is done in roadways. THIS DOES NOT RELIEVE US OF RESPONSIBILITY

The principle shortcoming of the statement is that it ignores the principle of plant ecology and plant succession. Until these principles become a part of the roadside program, any noxious weed control program will continue to be a failure.

Page 6. C. Need

6. The statement "herbicides are considered the only practical method of controlling weeds growing in inaccessible areas." is frequently contradicted in many following statements which indicate the apparent intent is to use herbicides in all areas. ONLY THOSE AREAS OF WEED INFESTATION OR INACCESSABLE AREAS

LE:plj

STATE OF MONTANA
DEPARTMENT OF FISH AND GAME
HELENA, MONTANA

RECEIVED
MAY 23 1973
Fish & Game Dept.

Office Memorandum

TO : Wesley Woodgerd, Director
Attention: Ralph Boland

DATE: May 21, 1973

FROM : Keith G. Seaburg, Regional Coordinator

SUBJECT: Comments on Highway Department's Environmental Impact Statement on Weed Control.

Definition of or naming of various weeds should not be left to the county to decide. There should be a statewide list in the impact statement. THIS IS NOT WITHIN OUR CONTROL

Pg. 24 - Item 3. Shouldn't the operator be a licensed weed sprayer?
HAVE ONE LICENSED MAN IN EACH DIVISION

Pg. 24 - 5 -c - Do not wash equipment in any lake, stream, river or pond. (The sprayers are not qualified to know whether it's harmful or not.)

Pg. 36. They completely ignore the nitrate build-up in the sprayed vegetation and the possibility of nitrate poisoning.

Pg. 37. The opening remarks under needs stresses the use of weeds, etc. by wildlife hence need control. Yet on pg. 37 they say "Generally wildlife will not graze intensively along highway right-of-way due to undesirable conditions created by passing vehicles." (They should make up their minds.)
TWO TYPES OF WILD LIFE — -

Conspicuous by its absence as a long turn alternative is, dressing the area with top soil to create an area more suitable to grasses.
THIS IS NOT PERTINENT TO THIS STATEMENT BUT IS BEING DONE ON ALL PROJEC SINC 19

It should be further pointed out that there have been some excellent studies in the Literature pointing out the importance of roadside cover to nesting bird populations. The following studies clearly point this out: Joselyn, B. G., 1968. Manipulation of Roadside Cover for Nesting Pheasants - A Preliminary Report. J. Wildl. Mgmt. 32(2):217-233; Page, R. D. and J. F. Cassel. 1971. Waterfowl Nesting on a Railroad Right-of-way in North Dakota. J. Wildl. Mgmt. 35(3): 544-549; Engler, Frank. 1957. Right-of-ways and Wildlife Habitat: A Progress Report. Trans. of the 22nd North American Wildl. Conf.: 133-144; Engler, Frank. 1953. Our Disregarded Rights-Of-Way- Ten Million Unused Wildlife Acres. Trans. of the 18th North American Wild. Conf.: 147-158.

In summary I feel that the proposed program is premature in that they really have no evaluation of the effectiveness of past programs. In other words if a tally were made one would probably find that each year more and more acres are being sprayed.

LESS NOW THAN 5 YEARS AGO

Keith

KGS:dm

STATE OF MONTANA
DEPARTMENT OF FISH AND GAME
HELENA, MONTANA

RECEIVED
JUN 6 1973
ENVIRON. RESOURCES

Office Memorandum

TO : James Posewitz **DATE:** 5/31/73

FROM : Dick Trueblood

SUBJECT: EIS -- MONTANA DEPARTMENT OF HIGHWAYS ROADSIDE WEED CONTROL PROGRAM

1. A recent waterfowl survey in the Dakotas[1] indicated that waterfowl nesting success was considerably higher on idle land than on land that had been grazed, mowed, or cultivated. On a 23-mile segment of I-94 near Jamestown, North Dakota, the distribution of nests found was 71 percent in the plots of idled land and 29 percent in the plots of mowed land.

2. What about timing of these applications? At present, we have documented instances of mowing, burning, and spraying at most any time during spring and summer, representing a threat to nesting birds, their eggs, and young offspring. If these practices could at least be delayed until about the middle of July, fewer losses would occur. The additional birds produced would more than offset the losses to vehicles. How [illegible]

3. P. 21. County weed control districts probably lack the expertise to know proper application procedures. Para. 4, p. 20, seems to support this assumption. Certainly, there will be wide variances between counties in this respect, just as there presently are in mosquito control work.

4. 2, 4, 5-T was one of 16 types of pesticides flatly banned by the Secretary of Interior on all federally-owned lands. we do not use

   Picloram was placed on the Interior Department's Restricted List--to be used only if other systems will not work, and then only in small amounts. we do

   These actions by the Department of Interior cast doubt on the safety of using these two chemicals as proposed by the Highway Department.

---

[1] Harvey Miller. 1971. Relationship of Duck Nesting Success to Land Use in North and South Dakota.

Richard W. Trueblood
RICHARD W. TRUEBLOOD
REGIONAL GAME MANAGER

RWT/drn

U. S. DEPARTMENT OF AGRICULTURE .. SOIL CONSERVATION SERVICE

These recommendations are covered by various changes made in the Environmental Impact Statement's final draft.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
MONTANA P. O. Box 970, Bozeman, Montana 59715

RECEIVED
MAY 15 1973
HELENA

May 14, 1973

Mr. H. J. Anderson
Director of Highways
Montana State Department of Highways
Helena, Montana 59601

Be sure Weed Districts Are Qualified and Licensed

Dear Mr. Anderson:

The draft environmental impact statement -- 90-DDG for the Montana State Department of Highways -- that was forwarded by cover letter dated April 23, 1973, was received by the Soil Conservation Service for review and comment.

We propose that the statement be strengthened by considering the following items:

1. Page 23, item g - Including reference to flowing streams or natural marshes where fishes are to be consumed by humans. ?
   Not done
2. Pages 32 & 33 - SCS guidance precludes the use of chemicals other than copper sulphate in aquatic environment where fish are to be consumed by humans. Not done
3. Page 36 - Suggest statement include consideration for time interval between chemical application and hunting season where human consumption of meat might be involved.
4. Page 45 - Suggest cultivation be excluded except in situations where chemicals are restricted entirely, or in cases where seedbed preparation would be appropriate prior to reseeding.

We appreciate the opportunity to review and comment on this proposed project.

Sincerely,

A. B. Linford
State Conservationist

RETURN TO AI & F
MAY BE RETAINED
DIRECTOR
INF
ACT

Final Draft Mailed to the Following:

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Urban 4-H Agent, Billings Area

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Phone 245-6711
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COUNTY WEED DISTRICTS
STATE OF MONTANA

Beaverhead

Supervisor: Cliffford Bay	Box 104, Dillon 59725
Board Members:	
Arnold Benson, Chairman	Rte. 1, Box 110, Dillon 59725
Ejner Hansen	Dell, 59724
Emil Schindler	227 E. Virginia, Dillon 59725
Secretary: John Maki	Box 190, Dillon, 59725

Big Horn County

Supervisor: Gary Benzel	712 W. 2nd, Hardin 59034
Board Members:	
Ned Wiley, Chairman	Wyola, 59089
Roy Nayematau	Route 1, Hardin, 59034
Leo F. Kleffner	421 N. Cody, Hardin 59034
Secretary: Harold Strobel	425 W. 8th, Hardin 59034

Blaine County

Supervisor: John Schilling	Chinook, 59523
Board Members:	
Harvey Naslund, Chairman	Chinook, 59523
Frank Nesslar	Chinook, 59523
Kenny Hansen	Harlem, 59526
Secretary: Frank Nessler	Chinook, 59523

Broadwater

Supervisor: Charles Mitchell	Townsend, 59644
Board Members:	
James Cox, Chairman	Winston, 59647
Walter Madill	Townsend, 59644
Kurt Spatzierath	Townsend, 59644
Secretary: Bruce A. Eckert	Box 670, Townsend, 59644

Carbon County

Supervisor: Ken Hayes	Bridger, 59014
Board Members:	
Clarence Jackson, Chairman	Belfry, 59008
Vernon Williams	Joliet, 59041
Louis Boggio	Luther, 59051
Louie Hyem	Joliet, 59041
Al Goldsberry	Bridger, 59014
Secretary: Jerry F. Weber	P. O. Drawer F, Joliet 59041

Carter County

Supervisor: None on steady	
Board Members:	
Edwin Gardner, Chairman	Hammond, 59332
Lloyd Carroll	Ekalaka, 59324
J. O. Teigen	Capitol, 59319
Fulton Castleberry	Ekalaka, 59324
George Adkin	Ekalaka, 59324
Secretary: C. Hitch	Box 313, Ekalaka

Cascade County

Supervisor: Lonnie Guill	Fort Shaw, 59443
Board Members:	
Frank Maurer, Chairman	400-6th St., Great Falls, 59401
Robert Lindberg	Simms, 59477
George Wolfe	Cascade, 59421
George McCafferty	Belt, 59412
Malcolm Adams	1st Nat'l. Bank, Great Falls 5940
Secretary: Joe Morris	4930-9th Ave. So., Gt. Falls

Chouteau County

Supervisor: Roy Marcussen	Carter, 59420
Board Members:	
Warren Woodburn, Chairman	Geraldine, 59446
Earl Arganbright	Carter, 59420
Max Clawiter	Big Sandy, 59520
Secretary: George H. Erickson	Fort Benton, 59442

Custer County

Board Members:	
Hugo Muggli	Rte. 1, Miles City 59301
Pat Willson	Volborg, 59351
Jim Richardson	Klamm's Trailer Court, Miles City
Secretary: A. C. Kegel	Courthouse, Miles City 59301

Daniels County

Board Members:	
James Crandell	Scobey, 59263
Ralph Shiell	Scobey, 59263
Harold Hanson	Flaxville, 59222
Secretary: Rick Sampsen	Scobey, 59263

Dawson County

Supervisor: Grant Johnson	Glendive, 59330
Board Members:	
Willie Day, Chairman	Glendive, 59330
Vernon Oellerman	Glendive, 59330
Jake Siegle	Glendive, 59330
Jim Raisl	Richey, 59259
Joe Cross	Lindsay, 59339
Secretary: Dale D. Bergland	Box 281, Glendive, 59330

Deer Lodge County

Supervisor: Gary L. Launderville	Rte. 1, Deer Lodge, 59722
Board Members:	
John Vanisko, Chairman	Rte. 1, Deer Lodge, 59722
Gary L. Watt	209 E. 3rd., Anaconda, 59711
Konrad Kern	West of Anaconda, 59711
Carl Jess	618 Locust, Anaconda, 59711
Charles Ralston	Wise River, 59762
Secretary: Gary L. Watt	209 E. 3rd., Anaconda, 59711

Fallon County

Supervisor: O. M. Speelmon	Baker, 59313
Board Members:	
O. M. Speelmon, Chairman	Baker, 59313
Robert Neumann	Baker, 59313
Robert Herbst	Baker, 59313
Ray O'Donnell	Baker, 59313
Art McNaney	Ismay, 59336
Secretary: E. R. Hoff	Baker, 59313

Fergus County

Supervisor: William Nevin	P.O.Box 1027, Lewistown, 59457
Board Members:	
William D. Snapp, Chairman	Danvers, 59429
Frank Southworth	411 W. Blvd., Lewistown 59457
Ray Vogel	Heath, 59449
Secretary: Mrs. Dean Morgan(Ann)	218 W. Janeaux, Lewistown 59457

Flathead County

Supervisor: Russell E. Marsh	Rte. 3, Kalispell 59901
Board Members:	
Clarence Sheldon	Holt Stage, Kalispell 59901
H. E. Robinson	1303-4th St. West, Kalispell 59
Roger Taylor	Star Route, Somers, 59932
Secretary: Merle Lyda	P.O. Box 638, Kalispell 59901

Gallatin County

Supervisor: Matt J. Antonich	Room 285 - Federal Bldg.,Bozeman
Board Members:	
Ed Blackwood, Chairman	Star Route, Bozeman 59715
Joe Alberda	Rte. 1, Bozeman 59715
Bob Keyes	217 W. Koch, Bozeman 59715
Secretary: Matt J. Antonich	Room 285, Federal Bldg.,Bozeman

Garfield County

Supervisor: Lawrence Artz	Jordan 59337
Board Members:	
Ansel Krum, Chairman	Jordan, 59337
Lloyd Burchett	Jordan, 59337
Jerry Coldwell	Jordan, 59337
Clinton Phipps	Brusett, 59318
Curtis McWilliams	Cohagen, 59332
Secretary: Lester Guptill, Jr.	Jordan, 59337

Glacier County

Supervisor: Howard DeZort	Cut Bank, 59427
Board Members:	
William Stufft, Chairman	Cut Bank, 59427
Dean Perry	Cut Bank, 59427
H. A. Powell	Babb, 59411
Charles Cooper	Cut Bank, 59427
Clinton Pilgeram	Browning, 59417
Secretary: Larry Brownell	Cut Bank, 59427

Golden Valley County

Board Members:	
Roy Patte, Chairman	Ryegate, 59074
Ned Schaff	Lavina, 59046
Albert Olson	Lavina , 59046
Roy Olson	Lavina, 59046

Granite County

Board Members:	
William Vietor, Chairman	Philipsburg, 59858
Cy Corlett	Drummond, 59832
Harold Olson	Hall, 59837

Missoula County

Supervisor: James Kallin	2511 River Rd., Missoula, 59801
Board Members:	
Ralph Thisted, Chairman	Huson, 59846
John Schroeder	Lolo, 59847
Anthony Rollin	638 Blaine, Missoula 59801
David Maclay	828 Ronald, Missoula, 59801
Don Roth	Clinton, 59825

Musselshell County

Supervisor: Kim Baker	Roundup, 59072
Board Members:	
Loren Hougardy, Chairman	Goulding Creek Rte., Roundup 59072
Bob Jorgenson	Roundup, 59072
Morris Jennaway	Melstone, 59054
Darryld Kautzmann	Box 128, Roundup, 59072
Secretary: Bob Jorgenson	Roundup, 59072

Park County

Board Members:	
James Warfield, Chairman	Pray, 59065
Stan Clark	Wilsall, 59086
George Lefgren	Livingston, 59047
Secretary: George Lefgren	405 So. 13th, Livingston, 59074

Petroleum County

Board Members:	
Earl Brady, Chairman	Winnett, 59087
Henry Langman	Winnett, 59087
Bill Self	Winnett, 59087

Phillips County

Supervisor: Gordon Watson	Malta, 59538
Board Members:	
Levi Shelton, Chairman	Dodson, 59524
John Yeska	Saco, 59261
Jack Lang	Malta, 59538
Secretary: Elaine Simser	Malta, 59538

Pondera County

Supervisor: Bob Thoroughman	Conrad, 59425
Board Members:	
A. L. Van Auken, Chairman	Valier, 59486
Art Lindseth	Dupuyer, 59432
Milo Dunn	Brady, 59416
Howard Orcutt	Conrad, 59425
Jay Castle	Conrad 59425
Secretary: Bob Wix	Ledger, 59456

Powder River County

Supervisor: George Morella	Broadus, 59317
Board Members:	
Dale Benge, Chairman	Coalwood, 59321
Bob Denson	Broadus, 59317
Ronald Talcott	Broadus, 59317
Secretary: George Morella	Broadus, 59317

Powell County

Supervisor: Thomas J. Quinlan	R.F.D., Deer Lodge, 59722
Board Members:	
Albert Beck, Chairman	Rte. 1, Deer Lodge, 59722
Ted Mannix	Deer Lodge
Loy Mizner	Deer Lodge
Harold Murphy	Ovando, 59854
Ernest Knight	Avon 59713
Secretary: Thomas J. Quinlan	R.F.D., Deer Lodge, 59722

Prairie County

Supervisor: Roy Amunrud	Terry, 59349
Board Members:	
Archie Schroeber, Chairman	C.B. Route, Glendive, 59330
Ted Irion	Fallon, 59326
Clarence Kuehn	Terry, 59349
Secretary: Philip R. Wilson	Terry, 59349

Ravalli County

Supervisor: Francis Donegan	Stevensville, 59870
Board Members:	
Bob Thoft, Chairman	Stevensville, 59870
Gary Browning	Stevensville, 59870
Tom Murphy	Corvallis, 59828
Arnie Nousanen	Hamilton, 59840
Edgar Wetzsteon	Sula, 59871
Secretary: Arnie Nousanen	Hamilton, 59840

Richland County

Supervisor: Ellis E. Williams	Sidney, 59270
Board Members:	
Charles Hackley, Chairman	905-8th Ave., S.E., Sidney 59270
A. H. Groskinsky	Rte., 1, Sidney, 59270
Johnnie Johnston	Poplar, 59255
Secretary: Ellis E. Williams	Sidney, 59270

Roosevelt County

Supervisor: John McNeil	Flaxville, 59222
Board Members:	
Eugene Larsen, Chairman	Culbertson, 59218
Alfred Kaschube	Brockton, 59213
Robert Taovs	Wolf Point, 59201
John McNeil	Flaxville, 59222
Secretary: Mrs. Verle Lambert	Culbertson, 59218

Rosebud County

Supervisor: Les Shumaker	Box 623, Forsyth, 59327
Board Members:	
Art Schiffer, Chairman	Rosebud 59347
Eli Spannagel	Forsyth, 59327
J. W. Sims	Forsyth, 59327
Secretary: Eldon Rice	Forsyth, 59327

Sanders County

Supervisor: Delbert Vannice	Box 85, Plains, 59859
Board Members:	
Edward Magera	Hot Springs, 59845
Donald Maegeli	Belknap, 59822
Joe Holland	Plains, 59859
Bryan Hanson	Plains, 59859
Secretary: Mrs. Damon Wheeler	Plains, 59859

Sheridan County

Supervisor: Harold Munson	Plentywood, 59254
Board Members:	
Jack Rasmussen, Chairman	Antelope, 59211
Morris Nelson	Plentywood, 59254
Harold Munson	Plentywood, 59254
Secretary: Bille G. Janssen	Plentywood, 59254

Silver Bow County

Supervisor: Leo R. Mock	Box 3264, Butte 59701
Board Members:	
Leonard Simmons, Chairman	Brown's Gulch, Butte 59701
Art Vannoy	3035 Nettie, Butte, 59701
Dick Setterstrom	Basin Creek Rd., Butte, 59701
Secretary: Suzie Ness	Basin Creek Rd., Butte 59701

Stillwater County

Supervisor: Charles Egan	Columbus, 59019
Board Members:	
Robert Story, Chairman	Park City, 59063
Norman Lien	Columbus, 59019
Art Adams	Columbus, 59019
Dean Rickman	Fishtail, 59028
Bob Hoagland	Rapelje, 59067
Secretary: Charles Egan	Columbus, 59019

Sweet Grass County

Supervisor: Arne Hoem	Big Timber, 59011
Board Members:	
Telmer Terland, Chairman	Reed Point, 59069
Kermit Anderson	Melville, 59055
Mike Breck	Big Timber, 59011
Peter Rostad	Big Timber, 59011
Arthur Schump	Big Timber, 59011
Secretary: Olaf J. Brekke	Box 640, Big Timber, 59011

Teton County

Supervisor: William S. Hitchcock	Choteau, 59422
Board Members:	
George Hodgskiss, Chairman	Choteau, 59422
Reg Wilson	Dutton, 59433
Wayne Proff	Dutton, 59433
Robert O. Lee	Fairfield, 59436
Jerry Wester	Fairfield, 59436
Secretary: George M. Goodwin	Choteau, 59422

Toole County

Supervisor: John Holzberger,	815-7th St. So., Shelby, 59474
Board Members:	
Pete Stoltz, Chairman	Sunburst, 59482
George Rankin	Ferdig, 59437
Bill Kleinert	Box 891, Shelby, 59474
Dale Heath	311-8th Ave., So., Shelby, 59474
Harry Simons	139-8th Ave., No., Shelby, 59474
Secretary: Laurence A. Hoffman	Box 609, Shelby, 59474

Treasure County

Board Members:	
Joe Williams	Hysham, 59038
Verlin Barnes	Hysham, 59038
Dan Deveny	Sanders, 59076

Valley County

Supervisor: Dell R. McCann	921 4th Ave., South, Glasgow, 59

Board Members:

Walter Pidwerbecki, Chairman	507-10th St., No., Glasgow, 592
Gene Etchart	1003-5th Ave., No., Glasgow 592
Alfred Akre	South of Glasgow, Glasgow 59230
Robert Rorvig	North of Nashua, Nashua, 59248
Leo Shellerud	Richland, 59260

Wheatland County

Board Members:

Arthur J. Lammers, Chairman	Shawmut, 59078
James C. Conley	Harlowton, 59036
Melvin Fox	Twodot, 59085
J. M. Staley	Harlowton, 59036
Mark Haynes	Judith Gap, 59453
Secretary: Jean L. Meyer	Harlowton, 59036

Wibuax County

Supervisor: Dick Begger	Wibaux, 59353

Board Members:

Richard Efta	Wibaux, 59353
Reuben Amunrud	Box 104, Wibuax, 59353
Russell Welsh	Wibaux, 59353
Secretary: Leonard Harris	Box 345, Wibaux, 59353

Yellowstone County

Supervisor: Herman Fox	3145 Boulder Ave., Billings, 591

Board Members:

Paul Ronan, Chairman	Rte. 1, Laurel, 59044
J. K. Mueller	Worden, 59088
G. R. Jack Milburn	2523 Longfellow Pl.,Billings, 59